

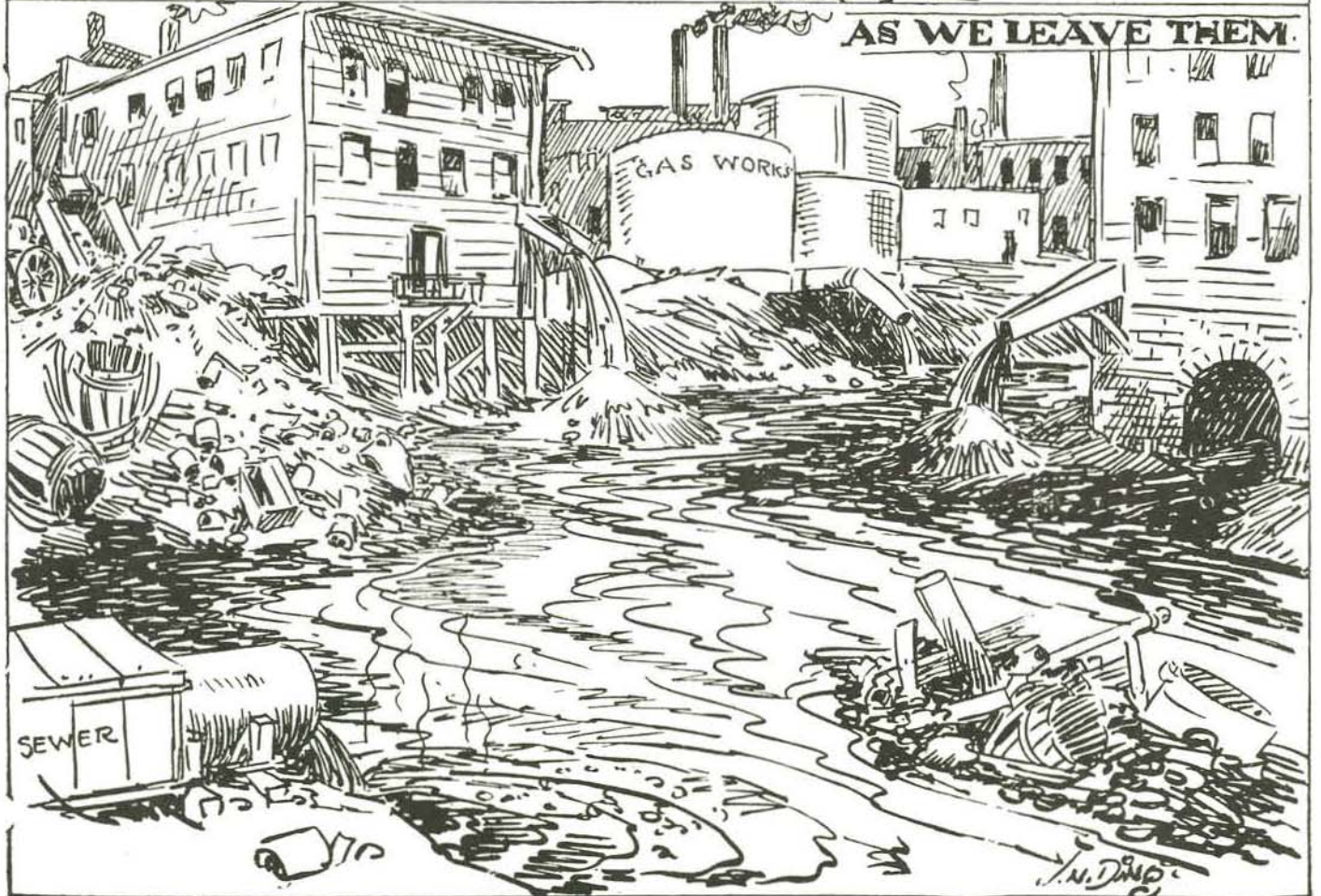
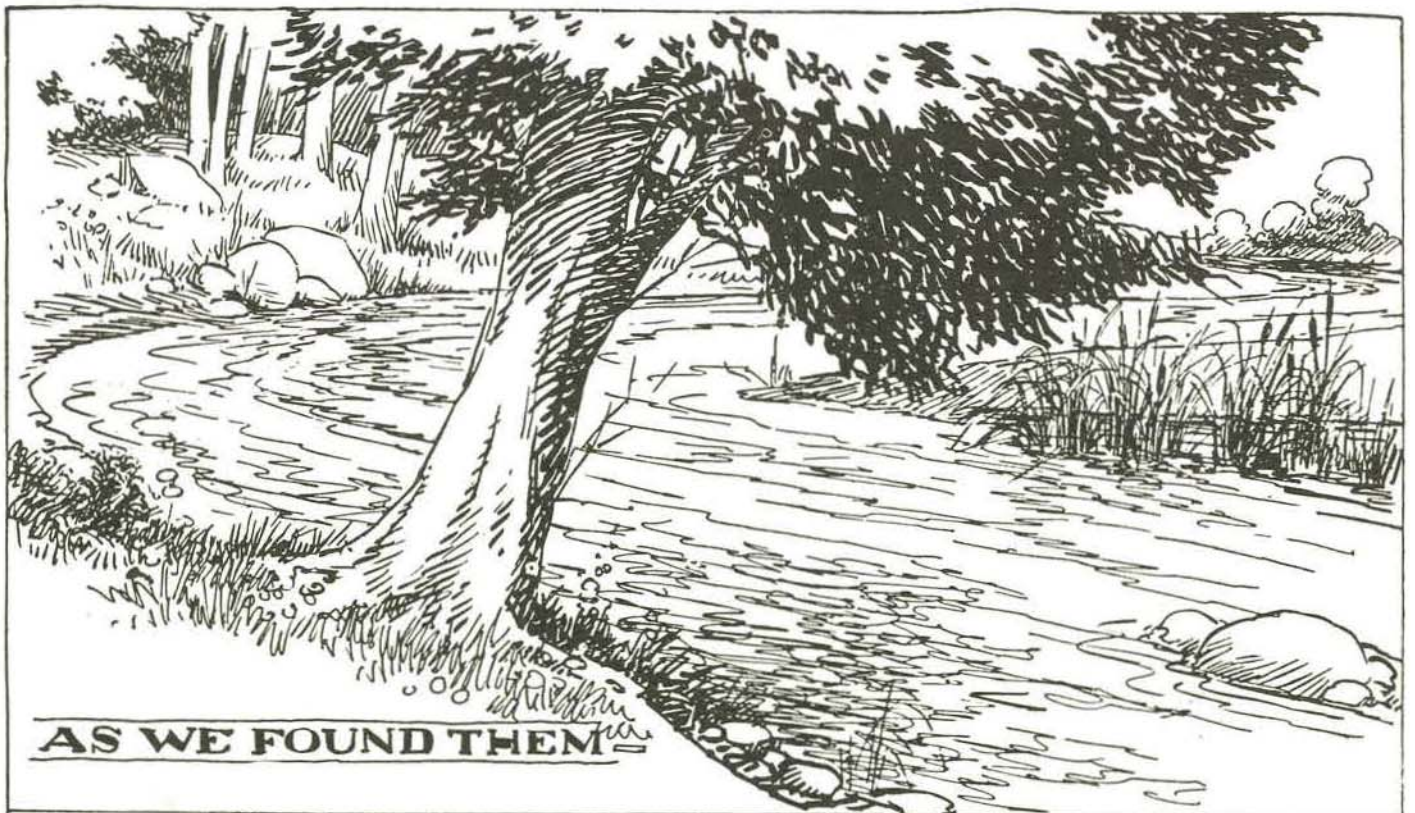
BICENTENNIAL ISSUE

FISHING • HUNTING • CONSERVATION • OUTDOOR RECREATION

Florida WILDLIFE

MAY 1976





Our Rivers

The sketching pen is often mightier than the sword. It was work like J.N. "Ding" Darling's newspaper cartooning of the thirties and forties that brought pollution problems to public attention and led to clean-up action. The above example is reprinted from *FLORIDA WILDLIFE*, April 1949. Darling (1876-1962) was a biologist, artist, two-time Pulitzer Prize winner, head of the U.S. Biological Survey (now the Fish & Wildlife Service), and first president of the General (now National) Wildlife Federation. A 4,300 acre national wildlife refuge on Sanibel Island, near Ft. Myers, bears his name. It was established in 1945.

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★

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The Cover

The bobwhite quail is without peer. It is a delight to see and hear, it's a top game bird by every sporting standard, and it's a gourmet-quality table bird. It also happens to be a favorite art subject among our many cover framers and decoupage artists.

From A Painting By Wallace Hughes

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ROSE  TALLAHASSEE

The CHAIRMAN COMMENTS

AS THIS THE 200TH BIRTHDAY of America is celebrated throughout the land, we Americans should stop and consider, "Where do we go from here?"

Our great country has changed so much from its founding days that the people who worked so hard to establish it would be hard pressed to recognize it. The vast expanse of virgin land is gone and man's work—both good and bad—dominates the landscape in many places.

Many of our streams and lakes are tainted with the wastes of today's society and certain species of wildlife such as the buffalo are now relegated primarily to wildlife refuges. Many Americans today have never ever savored wild game.

Fortunately many species of wildlife such as the white-tailed deer are more abundant than ever, and thanks to the growing cooperation between industry and environmental groups, many of our waters are being restored.

If we want our descendants to have something to be proud of when they celebrate the second 200 years, we must dedicate the coming year wholeheartedly to continuing this cooperation.

We must work to clean up the air and water. Our beautiful natural environment must be held in sacred trust for future generations.

The cry to save what we have left is no longer a lone voice, but has been joined by the great majority of our countrymen. And we are working toward that goal diligently in our state.

Since its inception, the Game and Fresh Water Fish Commission has dedicated itself to protecting and preserving our wildlife and our natural environment, even when it was not fashionable.

The wounds are still there from the battles fought for this mission. Now we are being

supported in our work by more and more people each day.

This special issue of *Florida Wildlife* has been dedicated to letting the people of Florida and elsewhere learn a little more about where we have been and where we are going in this state.

We have tried to give you a little history of our past struggles, the present skirmishes, and the future battles. The job of saving what we have is never going to be an easy one.

Our work is not saving the wildlife we have for exhibition as rare specimens, but insuring everyone has the opportunity to enjoy this heritage.

Recognizing that this takes more than just fish and wildlife managers, we have with us today a team of dedicated professionals in the field of habitat protection. For without this habitat, the wildlife and freshwater aquatic life of this state is doomed.

Our work would have been harder without the dedication and interest of sportsmen and other individuals in the proper management and preservation of our wildlife. This support in the years to come will determine what our children and our children's children will have to enjoy.

Throughout this bicentennial celebration, let all of us give thanks for what we have been able to accomplish and let us reaffirm our faith in the future.

Randolph R. Thomas



R. R. THOMAS, Chairman
Game & Fresh Water Fish Commission

THE BICENTENNIAL FEVER which is sweeping this country is having many good side effects, including one which we think is most important. It is causing the citizens of this nation to reflect over their past accomplishments and failures. If we can learn from this, perhaps at least some of our mistakes can be overlooked.

Compared to the 200 years America has been a nation, the 33 years the Florida Game and Fresh Water Fish Commission has been around is awfully short. But looking back, we too can see our accomplishments and our failures. It is the progress we have made in conservation that keeps us going, overcoming the failures we have had and the mistakes we will surely make in the future.

For when it all boils down, it is persistence, not brilliance, that succeeds. And we, at the Commission, have been persistent.

Only in the last 50 years has any real progress been made. Prior to that, much of the work we were endeavoring to do was based upon barbershop opinion and guesswork and represented a period of exploitation of our natural resources. Now we have scientific knowledge and a conservation ethic to guide our path.

Scientific research in the field of wildlife is very new, and it is easy to see why a communications gap sometimes exists between the average sportsman and the biologist. Fortunately the gap is decreasing every day as evidence reflecting the importance of scientific knowledge accumulates.

The first wildlife biologist employed by the Commission started work some 30 years ago. The tools we have now are a far cry from those with which I started, and the research and management principles have come a long way since those early days. But there is still much we need to know.

Bruce L. Stiles, of the Iowa Fish and Game Department, once said, "The aim of research is to know the truth. Even unwelcome truth is better than cherished error and the welfare of our resources depends upon the extension and diffusion of knowledge."

It has been through research and the application of these findings that the sportsmen of Florida have benefited. Research and proper management techniques have resulted in the removal of size limits and closed season for warmwater fish after investigations revealed year-round fishing had no adverse effects on the population.

It was research that pointed out the relative unimportance of the rod and gun upon warmwater fish and small game, and brought about an end to the waste of the sportsman's dollar in such futile endeavors as wholesale stocking of fish and quail. The development of the automatic quail feeder revolutionized quail management, particularly in south Florida.

The old philosophy about wildlife conservation,

DR. O. E. FRYE, JR.



From The DIRECTOR'S DESK

"Do something even if it's wrong," no longer generally prevails, but the demand for action without adequate knowledge still sometimes gives us problems. This is nowhere more evident than in a proposal to turn an exotic fish, the grass carp, loose in our waters. We appreciate the impatience and frustration of a lakeside dweller whose lake is choked with aquatic weeds—especially when he hears his problems would be solved by releasing a few fish. Perhaps this is true, and we hope it is—provided the cure is not worse than the disease. In the meantime, the Commission is holding fast to its demand for competent research on the effects of the grass carp upon all aspects of freshwater aquatic life before we allow it to be released indiscriminately in our waters. Instances of harm to our environment from ill-advised introduction of foreign animals and plants—including the very aquatic weeds that we wish to control—are legion.

In this situation, as with practically every proposed plan of action, extreme points of view appear. One school of thought says, "Proceed immediately; if it's wrong then we can correct it." The other extreme requires absolute information on every aspect of the question. The correct approach lies somewhere in between. Judgment as to timing on this question is the key to responsible action.

Finally, Florida and the nation are faced with a very real dilemma. We have an expanding population and diminishing resources. When will our human population level out? What will be left of our natural environment when it does? We must know the best way to manage what we have now in order to insure the future.

Looking ahead, we see hard battles to be fought, and we are ready for them. But in looking over the past, we know we have come a long way. With the support of hunters, fishermen, and the many other individuals with a real interest in wildlife, and dedication to its preservation and proper management, we can look ahead with cautious optimism.

unbridled expansion may easily spell the end of the charm that lures people to Florida

Protecting Habitat CAN WE HOLD ON?

By **DAN DUNFORD**

**Director of Environmental Programs
Florida Game & Fresh Water Fish Commission**

THE CANOE IS SLIPPED QUIETLY into the crystal waters just as the warm Florida sun rises over the trees. Camping gear has been stowed for an overnight stay at a halfway point between the cold waters of the springhead and the open waters of the Gulf of Mexico. After an initial burst of enthusiasm, related to the excitement of spending a weekend away from the bustle of city life, the canoeists settle back as the craft, with little effort by the occupants, makes its way lazily down the river toward the Gulf.

The pristine swamps, relatively unaltered by man, provide viewing opportunities for the nonmechanized travelers as they note the presence of egrets, herons, and songbirds in the swamps and shallow waters along the river. An occasional glimpse of the seemingly prehistoric alligator or a huge cypress tree reminds the travelers that this river must appear only slightly different from when the first Americans saw it.

These canoeists represent only a small segment of the numbers of people who seek the swamp for escape, solitude, or their favorite recreation. Hunters flock to the area during the fall, and still find game fairly plentiful. Swamp life includes deer, turkeys, squirrels, wild hogs, and waterfowl, which can be found each year, for the swamp, as it has for many thousands of years, replenishes its own. In addition, the river and bay are dotted with motorboats of all sizes, shapes, and colors on the weekends and holidays as their occupants toss every imaginable fishing lure or bait into the river waters. They are generally not disappointed.

During the week, the river mostly belongs to its wild creatures, and to the half-dozen commercial fishermen who navigate each day down the unmarked channel toward the bay. The unspoiled habitat which lures the 8-to-5 crowd—the vibrant river swamps, the high quality of water in the watershed, the warm sun, the marshes, and the submerged grasses—yields its produce in plentiful abundance, and the men



Photo By Florida News Bureau, Dept. of Commerce

return each day with moderate-to-heavy catches of fish and shellfish.

It is sad, in a way, because it won't last.

Florida development has occurred, and continues to occur, without benefit of an overall management strategy. And although there is presently such a strategy developing, it is highly unlikely that the quality of habitat described above can be maintained. In fact, the developing policies indicate that areas with sparse residency will probably be the recipients of the future new residents of Florida. Since, apparently, there are no real efforts being made to curb growth in this state (government efforts are being directed toward planning for growth), we can expect the places we presently travel to for the enjoyment of the natural features to become more populated. This can only lead to a significant reduction in the quality of habitat for wildlife and man.

The flow of new residents into Florida has not ceased since the boom era of the 1920s. Even economic stress apparently affects the growth in only a minor way. The search for greener pastures is endless. Florida, commonly referred to as a natural

subtropical paradise, is in trouble. Yet, we can expect to have 10 million residents by the year 2000.

How are we to cope with this population pressure? How is the state dealing with the problem? Where do we go from here? What can the Game and Fresh Water Fish Commission do?

In recognition of the problems surrounding growth in this state, the 1974 Florida Legislature passed HCR 2800, a policy on growth for Florida. As stated earlier, the policy is not aimed at stopping growth or stimulating it, but accommodating what seems to be a never-ending flow of new residents. The State Planning Department, with cooperative efforts from all state agencies, is presently attempting to determine policies and procedures necessary to implement HCR 2800.

The policies developing put a significant value on protection of natural amenities: rivers, bays, swamps, etc., which are recognized as the factors which draw large numbers of tourists into the state.

This will be most difficult, as people overstress or overuse the amenities which they came to enjoy.

As wildlife managers, sportsmen, and recreationists, we must prepare for hard times ahead. Economic pressures, energy shortages, and technological expansion compete fiercely with quality wildlife enjoyment. The philosophy of all wildlife protection programs is presently one of hanging on, a holding action. The continuing job is to prevent further losses of species, communities, and valuable habitat.

Wildlife populations are good indicators of environmental quality, since they are most sensitive to minute changes in ecosystem compositions. Biologists, working closely with wildlife, have known and recognized the wildlife crisis occurring in Florida for many years.

To combat the recognized deterioration of wildlife habitat, the Game and Fresh Water Fish Commission implemented its own special program in habitat protection over 20 years ago. At first, most

(continued on next page)



Photo By William Greer

Photo By Wallace Hughes



Typical of expanding city in Florida is Jacksonville, opposite page. Florida's population has been growing at a lively clip for the past 50 years or more. The result has been a steady encroachment on wildlife habitat. There is yet unspoiled stream and swamp habitat where the outdoor-minded can enjoy views of a variety of wildlife, such as the pair of wood ducks, above. Serenity of slow-flowing river, left, its banks heavily forested, has great allure for the many weekend escapees from city pressures.

(continued from preceding page)

of the efforts took place in south Florida, but now the program is a major component of Commission activities statewide.

Because of its constitutional authority over protection and enhancement of fish and wildlife (Article IV, Section 9), the Commission actively participates in all state and Federal activities which may affect Florida's future wildlife populations. The Bureau of Environmental Protection is specifically empowered to assess and report to state, federal, and local agencies (regulatory and planning), the impacts of proposed programs on wildlife and freshwater aquatic life.

In keeping with the "hold-the-line" philosophy in regard to continuing losses of habitat, the Commission maintains a firm stand against habitat destruction that can be avoided when proper consideration is given to wildlife values. For example, it has been estimated that over 5 million acres of wetlands were destroyed in the State of Florida between 1850 and 1971. It is imperative for many wildlife species that additional wetlands remain intact or be restored. Continuation of drainage programs for agriculture, mosquito control, and housing developments cause considerable conflicts between continuing growth and habitat quality. Economic criteria developed thus far for wild animal populations cannot keep pace with the traditional economics of growth. If we attempt to argue economically, we often lose, for no reliable methods have been found to accurately quantify the importance of quality of life as it relates

to the protection of natural areas. Aesthetic and recreation economics, together with habitat evaluations, are not up to par with construction economics.

The Commission, through its Bureau of Environmental Protection, has developed several guidelines, however, which are utilized in evaluating construction operations. Considerable emphasis is given to recommending low-energy development, protection of areas and habitats presently recognized as being environmentally sensitive, protection of habitats supporting viable wildlife populations, protection of wildlife in management areas, and protection of areas remaining in a near-pristine condition.

Low-energy development means utilizing the natural functions of the land to work for man instead of high-energy technology. For example, wetlands can be utilized for cleaning up wastes; mangroves and marsh vegetation can help prevent erosion (instead of concrete bulkheads); protection of flood-prone areas precludes the need for flood protection projects; utilizing existing navigation channels precludes dredging and future maintenance operations; preventing highway construction from diverting stream flows and overland drainage patterns eliminates the need for future corrective measures; preservation and utilization of native vegetation in landscaping necessitates little maintenance, pesticides, or fertilizers; protection of shade trees helps prevent heavy utilization of artificial cooling devices; and solar heating reduces home heating fuel requirements.

Development which requires low-energy for con-

Photo By Wallace Hughes



struction or maintenance has considerable and significant benefits for wildlife. Energy growth in the United States has expanded at an annual rate of 4% in recent years, which is a higher per capita consumption of all forms of energy than that of any other nation. Today, we are embarking on a project to become independent in production. In so doing, natural habitat and wildlife species are suffering.

Extraction, production, and transportation of energy is presently a high priority operation on a national scale. Oil drilling (offshore and inland), port development, waterways development, pipelines, new power plants, and strip mining are all means familiar to most Floridians of providing the growing demand for energy. All such operations require the alteration and destruction of natural habitats for their implementation. Many times, the destruction is permanent.

On the other hand, developing methods which

utilize natural systems saves significant initial and future costs, while preserving and protecting native habitat and wildlife. Native trees and shrubs, wetlands left as greenbelts, drainage ways, sewage treatment areas—all provide habitat which, normally, under fuel-intensive development, would be lost. It is definitely in the best interest of viable populations of wild animals to hold the line on energy development.

Additionally, our development guidelines stress the importance of protection in areas which are already recognized as sensitive or important natural habitat. This generally includes those areas that have public as well as governmental recognition, such as aquatic preserves, areas of critical state concern, environmentally-endangered lands, state parks, state canoe trails, wildlife management areas, and recreational waters.

Persistent and strong advocacy of regulations and measures is necessary to preserve the integrity of these areas. Insistence on the addition of new lands and waters in those categories which are important to wildlife is also an important component of our protection philosophy.

The Game and Fresh Water Fish Commission provides information to regulatory agencies such as the Department of Environmental Regulation and the Corps of Engineers on the wildlife and aquatic life aspects of projects under their jurisdiction. The Commission reviews each proposal to determine the present and future ramifications of the development as it might affect wildlife. Attention is centered around two main aspects of the site proposed for alteration: (1) the degree of existing biological stresses in the project vicinity, and (2) the type habitat which is to be altered.

Most lands, under regulated development, fall

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Marshlands function as efficient natural filters in cleaning up wastes, also buffer land against wind and water erosion. The bulldozer, above, can be an agent for the wholesale destruction of wildlife habitat if its use is not carefully controlled. Florida's ever-rising population requires homes, which means even further withdrawal of lands from their natural uses.

Photos By Gene Smith



(continued from preceding page)

within three broad categories: (1) severely altered, (2) moderately altered, and (3) pristine or minimally altered. In the first two categories, which include areas such as Boca Ciega Bay, North Biscayne Bay, the Florida Keys, the Flood Control project, Jacksonville Harbor, and many other areas, our Bureau's review may be favorable toward accommodating some types of development if measures can be implemented to mitigate damages which occurred in the past. For example, a small fill area on damaged substrate in Jacksonville Harbor, necessary for water deepening activities, may be acceptable if the developer will agree to construct a berm planted with marsh grasses between the development and the open waters of the St. Johns River. Thus, construction can be implemented at some advantage to the natural system. Careful attention is also given to efficient construction practices, the necessity of construction, and the utilization of existing alterations such as channels or marinas.

Review of proposals for construction areas covered by alteration category (3), minimally altered areas, are subject to thorough scrutiny, as these are generally the location of highest existing wildlife values. Little if any improvements are likely to occur as a result of project construction.

The river system described at the beginning of this article can stand little change and still support the population of wildlife and aquatic life necessary to satisfy the desires of the public for recreation and livelihood. In many cases, the regulatory agencies are willing to justify approval of proposed alteration in pristine areas because only a small part of an intact system will be altered. It is our belief that these areas should be protected as closely or more so than areas under population stress. In many cases, these pristine locations are the only areas left for wildlife which cannot adapt to urban pressures. If we are to hold the line on habitat disruption and destruction, we must stringently guard our remaining pristine habitats.

After the degree of stress of the project vicinity has been determined, our review turns toward the specific community which is to be altered. Is the habitat under consideration part of a larger system or is it relatively isolated? Is it large enough to make a significant contribution to surrounding systems or to support significant populations of fish and wildlife? Is the habitat a good example of that type of community or is it currently stressed by natural or manmade activities? Can the habitat be expected to recover from the proposed construction?

The answer to the above questions, along with the review measures described earlier, form the basis for our recommendations regarding construction or planning activities occurring in Florida. Restorability of stressed systems, and mitigation measures in all project designs, are always major concerns.



Photo By Gene Smith

Overdevelopment—progress to some—poses a real threat to delicate fish and wildlife habitat statewide, yet wildlife brings many people to Florida in the first place. Only a strong policy and comprehensive planning will stem the rampant encroachment into remaining wild domain.

The nature of wildlife habitat protection programs in the face of an expanding population often causes serious conflicts. The canoeist quietly paddling down the seemingly pristine Florida river may not be aware that the shorelines are platted for residential development, including sites for marinas; or that a new power plant, of the nuclear variety, is proposed for the area, because of the abundant water supply and low population; or that a dam is planned on the river, for water supply or navigation purposes.

Hunters may not be aware that the woodlands in which they are stalking their quarry hold significant mineral deposits requiring strip mining procedure, or that increased timber requirements will result in clearing and drainage operations.

The conflicts go on.

In south Florida, drinking water requirements and agricultural water demands are paramount uses for wetlands areas. Lakes, rivers, and streams are altered and polluted for industrial expansion and transportation.

All conflicting uses appear necessary. Every use produces arguments in its favor. There seems to be no end. Growth continues, and wildlife habitat dwindles. Where do we stop? ●

When It Started

FISHING

it took a long time for sport fishing to get started in America but once underway it quickly became a national diversion.



By CHARLES WATERMAN

SPORT FISHING GOT A SLOW START in Florida, but then it got a slow start in the rest of America too. Colonists needing food weren't too concerned with catching fish for fun, and the whole business was considered a little frivolous. The strict churchmen of colonial days looked with disfavor upon anybody who frittered away his time with outdoor pleasures.

Authorities generally figure American sport fishing began to get under way about 1830, and even then writers on the subject tended to use assumed names since it wasn't considered quite respectable. Oh, there had been something of a transplant of English fishing skills and customs, but the eastern brook trout was at first considered too easy a mark, and Atlantic salmon were so thick they were used for fertilizer—not much of a challenge there. The “new” fish of America, such as the striped bass, the black bass, and the tarpon, were slow to be recognized by traditionalists.

For that matter, it was a long time before anybody so much as classified the black bass, and that business was fouled up around 1800 when some specimens were sent to France for classification. By coincidence, the first fish studied were a little deformed, which didn't help much. There were so many local names that it was almost 1900 before fishermen really began to get smallmouth bass and largemouth bass into the right slots. The fact that they were finally called bass (which they aren't) was more chance than anything else.

Today a tournament winner might introduce a

This picture from Dimock's *Book of the Tarpon* shows a drastic method of hauling a big fish into a canoe.



new plug and by tomorrow night several manufacturers could be planning to build it. In the nineteenth century, things were considerably different. It was almost 100 years between the first “Kentucky” bait-casting reels and the development of plugging gear similar to that used today, even though most of the elements were present by 1820. The multiplying bait-casting reel got its start when some Kentucky jewelers produced handmade models. George Snyder, of Paris, Kentucky, is believed to have made the first one about 1810, and the cane rods they used with those precise winches were long and light. But while Kentuckians were getting close to modern fishing methods, the rest of the country continued to use rods that weighed pounds instead of ounces.

There was some early fly fishing for bass, a logical offshoot of traditional trout fishing, but nearly all of the early “baitcasting” was just that. Although the black bass became a prime target of artificials later on, nearly all of that early bass fishing was with frogs and minnows. The long, light rods used with the Kentucky reels were primarily minnow tossers. And the Florida bass waters, holding the biggest largemouths of all, were unknown for the most part.

There was early fly fishing for striped bass, a natural outgrowth from the use of a long and heavy fly rod for Atlantic salmon, and the striper brought about organization of the exclusive clubs of the upper east coast, clubs made up of the tycoons of the time. They did much of their casting from stands built above the surf. Their heyday lasted from the end of the Civil War to about 1900, when striped bass disappeared from the North Atlantic coast to be gone for many years. They came back in the thirties for another generation of anglers. Signs of the old stands can still be seen on the New England coast if you know where to look.

The striped bass was a developer of sport fishing for it was sought with true casting tackle of moderate weight and it was the striper fishermen who pioneered sport fishing for really large saltwater species. The tarpon was the first big one to be challenged with sporting tackle. Historians of saltwater sport fishing point to the fact that it was essentially freshwater anglers who brought their methods to the salt, coming from inland.

Meanwhile, back at the bass lakes, Dr. James Henshall, later to be known as the “father of black
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bass fishing," began to decide what bass fishermen needed, and in the 1870s he came up with some specifications for the "Henshall rod." Back in the 1840s, Samuel Phillippi, of Easton, Pennsylvania, had developed split bamboo rods, and by Dr. Henshall's time the American trout rod was regarded as a nearly perfect "feeling" instrument, even though it was running some 10 or 12 feet long and thus pretty heavy by modern standards. The Henshall rod, built to rather rigid specifications as to length and weight, was intended as a bait rod for bass but with the overall feel of the trout rod. The Henshall rod was generally 8 feet 3 inches long, not always built of the same materials, and, being much shorter than the flyrod, it could be considerably stiffer and retain a similar balance.

Then came the "Chicago rod," a much shorter weapon that was on its way to becoming the modern plugging stick, but it was basically a frog pitcher. Real red-blooded American baitcasting didn't get under way until after Jim Heddon whittled out a wooden bass plug along about 1896. That's almost a century after that Kentucky craftsman made his precise multiplying reel. There may have been earlier multiplying reels in Britain, but our American development came from the Kentucky.

Florida may have been slow in making points with the continent's biggest black bass, and she may have been overshadowed by the northern stripers, but when the tarpon craze hit the North, Florida became a sudden mecca for something new. Nobody had caught any 100-pound fish on rod and reel, and the tarpon was the logical candidate for a beginning—since you could see tarpon rolling from shore, could row to them with a skiff, and might even cast to them from land. It appears that some of the smaller ones were caught with flies very early, but it was the monsters that sportsmen really wanted.

It developed later that the tarpon was a good light-tackle target but a tough one to break in with, because of its highly explosive initial energy and the difficulty of hooking it. At first the "sport fishermen" were content to stick the silver king with grains (multipronged spears) and let the fish tow a boat until it was exhausted. Spearing was simplified by the fish's habit of rolling.

The first tackle used included enormous shark hooks (evidently not very sharp) and hawserlike lines. After the tarpon had torn up considerable gear, one northern sportsman offered to pay the expenses of any angler who would journey to Florida and land a sizable tarpon on sporting tackle. It was 1885 before William H. Wood landed a 93-pounder on rod and reel, after which there was a storm of claims of earlier successes. Wood had used the system of letting the fish swallow a large mullet before he went to work with the rod, a system still used when a fisherman is looking for a sure thing, but actually a form of gorge fishing.

I think we can say the tarpon thus really opened up Florida sport fishing, for there was a parade of expeditions after the first few catches. By 1895, William C. Harris, writing in *The American Angler*, described tarpon tackle that wasn't far from what is used by many fishermen today. The rods were 6 or 7 feet long, the reels were what were used for striped bass (they were knucklebusters and required a leather thumb guard), and they took 500 or more feet of linen line.

The tarpon was a craze for a time, but just as the twentieth century dawned, a man caught a bluefin tuna on a rod and reel off Catalina Island, and, for a time, at least, the tarpon took something of a back seat.

Now undoubtedly there must have been bass fishing all this time among Florida settlers, but it didn't receive much publicity. For later fishermen, one of the biggest developments was the invasion of the shallow salt water with light tackle.

A. W. Dimock, who wrote *Book of the Tarpon*, first published in 1912, probably did more to popularize the tarpon as a light tackle game fish than anyone else. Some critics say he gave the impression of being a leader whereas others had gone before—and it is cynically true that the squeaking wheel tends to get the grease—but there is no doubt that Dimock, who spent a great deal of money and time fishing, especially on the Florida mangrove coast, had some adventures worthy of the most lurid outdoor tales of the present. His brother, Julian, illustrated the book with tremendous photos of tarpon action (I'm still looking for a supplement concerning the camera technique, said to have appeared when the book was new.)

Dimock caught big fish with flyrods, he caught them from canoes, and there are some illustrated episodes in which the fish joined the fisherman in a swamped canoe. So the big deal of big tarpon on flyrods, beginning about 15 years ago, is nothing really new despite the greatly advanced techniques and equipment.

Some of the earliest articles concerning Florida black bass have to do with "schooling," the business in which numbers of bass get together to strike bait fish on the surface. The St. Johns was best known for those scenes, and "acres of jumping bass" were common in the old days.

Whatever else has happened to Florida bass fishing, the halcyon days of the school bass seem to be over. They performed best when rivers were running strongly and the bait fishes, as well as the bass, were in schools. Up until about 1965 there were dedicated school bass fishermen who went for no other kind of fishing. Today, schooling is much less frequent, although it still happens on some lakes as well as on rivers.

Bonefish, long confused with ladyfish, were slow to become a major attraction in Florida fishing. They were first landed with heavy tackle and bait,



Debie Waterman got her start plugging with these small bass.

and although they may have been more plentiful 50 years ago, they were never easily caught. From time to time, visiting sportsmen would discover the bone and relate tales of its tremendous speed and power, but it remained something of a mystery fish, buried in confused terminology, and even the generally reliable Dr. Henshall told of its wild leaping when hooked. Most bonefishermen have never seen one jump.

Zane Grey, better known for his pioneering of deep-sea fishing, made frustrated assaults on the bones of the Florida Keys, trying to catch them without the help of a guide, and using bait with what would be considered heavy gear today. His brother, who accompanied him, had tough luck too.

As far as being a tourist attraction, the bonefish didn't come into its own until after World War II. Joe Brooks, who once served as manager of the Miami Metropolitan Fishing Tournament, probably did more than anyone else to popularize the fish as flyrod quarry, and he was ably assisted by Allen Corson, fishing editor of the *Miami Herald*. I believe Corson made the initial introduction of the bonefish to Brooks and his flyrod, but Brooks took it from there. He wasn't the first man to catch a bone on a fly, but he did it "on purpose" for the rest of his life. He wrote bundles of articles on the subject, and moved to the Keys to be near the fish.

Another thing contributed greatly to the bonefish's popularity: the spinning reel, which was widely accepted in America following World War II. Spinning was an old form of fishing in Europe,

and was introduced in this country before the war, but its development here was halted by hostilities. When peace came, thousands of ex-servicemen took up fishing, many of them picking up spinning tackle without experience in other forms of the sport.

Spinning gear with monofilament line was able to deliver a small lure efficiently with a minimum of practice, and it put tourist fishermen on bonefish with either shrimp or small jigs. The bonefish became second only to the sailfish as a Florida salesman. In more recent years, it has receded somewhat in general popularity, although it's still pursued by a faithful contingent of light tacklers.

Along with the spinning reel another development, seldom recorded, changed sport fishing in Florida. That was the small casting jig, and it became one of the most deadly fishing tools in the world. With a light spinning rod and monofilament line, experts were able to operate in a wide range of water depths. "Bottom bouncing" jigs become a science. The jig was probably the oldest lure known to man, but it had previously been a heavy-duty proposition, worked from handlines and heavy trolling gear. Now it became a collector of innumerable varieties of fish, some of which had never before been considered artificial lure takers. At that time, some of the jig specialists began to compile life lists of the fish they had caught. Years ago, Phil Francis, for one, reported well over 100 species, in both fresh and salt water, and his list may have grown since then.

In the past decade there has been a revival of interest in turning-spool casting reels, most of them free-spooling and superior to spinning gear for accurate casting of somewhat heavier weights. Most current anglers, whether specialists in fresh or salt water, use both types of reel.

The black bass boat was late in coming to Florida. Electronic fishing and the specialized craft that went with it were developed on deep impoundments of the South and Midwest, and the true bass boat was an oddity in Florida until the late sixties. Now it's widely accepted, even though shallow lakes have somewhat less need for electronics than have deep reservoirs.

The plastic worm, now accepted as the most reliable artificial bass catcher of all time, evidently developed out of the pork eel, but it came on in so many forms, from so many directions, that it's hard to realize it hasn't always been here. It came to Florida at about the same time it was developing elsewhere.

The "fishing machine," an open fishing boat of something less than 25 feet for the most part, and usable in both back country and open sea, has had much of its development in Florida within the past 15 years.

The fishing may not be getting better, but the fishermen are. ●



TWELVE THOUSAND YEARS AGO, the first Floridians saw great shaggy mammoths and mastodons moving in the swamps of the Wacissa and Ichetucknee rivers. Perhaps these huge beasts were drawn there by the lush vegetation, or driven there by a ring of fire surging through the pine and scrub oak lands, to be mired and killed by the ancient hunters. All we know for sure is that they were there, for their algae-covered bones yet carpet the bottoms of many spring-fed rivers, where, if you can brave the cold water, you can dive and bring them up, for the spring runs carried no sand or silt to cover them. Drawn there by the water and the last of the great faunal assemblage of the Pleistocene, Florida's first men encountered a wetland—the river swamp—that would in the future both nourish and mystify them.

As sea levels rose, great cypress forests invaded the flood plains of our rivers. Two hundred years ago, William Bartram said "We are struck with a kind of awe . . . the trees so lofty . . . having flat tops, and all of equal height, seemed to be a green plain, lifted up and supported upon columns in the air . . ." Deep in the river swamps of the Suwannee and St. Johns, Bartram was overwhelmed with the diversity and abundance of life. Flocks of "Spanish curlew" wheeled overhead, green clouds of parakeets chattered as they devoured the cypress seeds, and the toy-trumpet call of the ivory-billed woodpecker resounded through the bottomlands of sweet gum and overcup oak. In a camp on a St. Johns bluff,

nature can clean up better and cheaper—to answer one frequently-asked question

Why Save A Swamp?

amid the bellowing of alligators and the splashing of huge schools of migrating fish, Bartram pondered the legions of red men who had camped there before him to feast on the mussels, fish, reptiles, and fowl that filled one of nature's richest larders.

A hundred years later, a Hart Line steamer, cruising by night, carried Sidney Lanier up the dark current of the Oklawaha River through one of Florida's most magnificent river swamps. The forest walls on either side were illuminated by fat-wood fires in iron baskets slung from the forecandle. Inspired, Lanier called it "the sweetest water-lane in the world . . . as if God had turned into water and trees."

While the tortured cry of the panther may still



Photos By Florida News Bureau, Dept. of Commerce

A treasure house of natural wealth, the river swamps must be zealously guarded against abuse. Wakulla River, at left, meanders its way through a reach of undisturbed woodland. The Oklawaha, above, although its watershed has been damaged by impoundment, yet flows through a segment of magnificent river swamp. A limpkin, right, is one of area's treasures.

By DR. CHARLES H. WHARTON
Professor of Biology
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be heard in a few last redoubts of wild swampland, the parakeets and ivorybills have vanished from the river swamps. An enduring stump here and there, flanked by a regrowth of ash and gum, are all that remain of the cathedral forest that awed William Bartram.

Quite oddly, it seems to me, the great swamps, and the flood plains that give our rivers life, have been strangely ignored in the descriptive literature of the past 200 years.

Yet these rivers and their protective swamps were the very lifeblood of the early South; watery roads that carried the essentials of life to settlers upstream and then floated out the wealth of America; logs from the seemingly endless forest of virgin longleaf

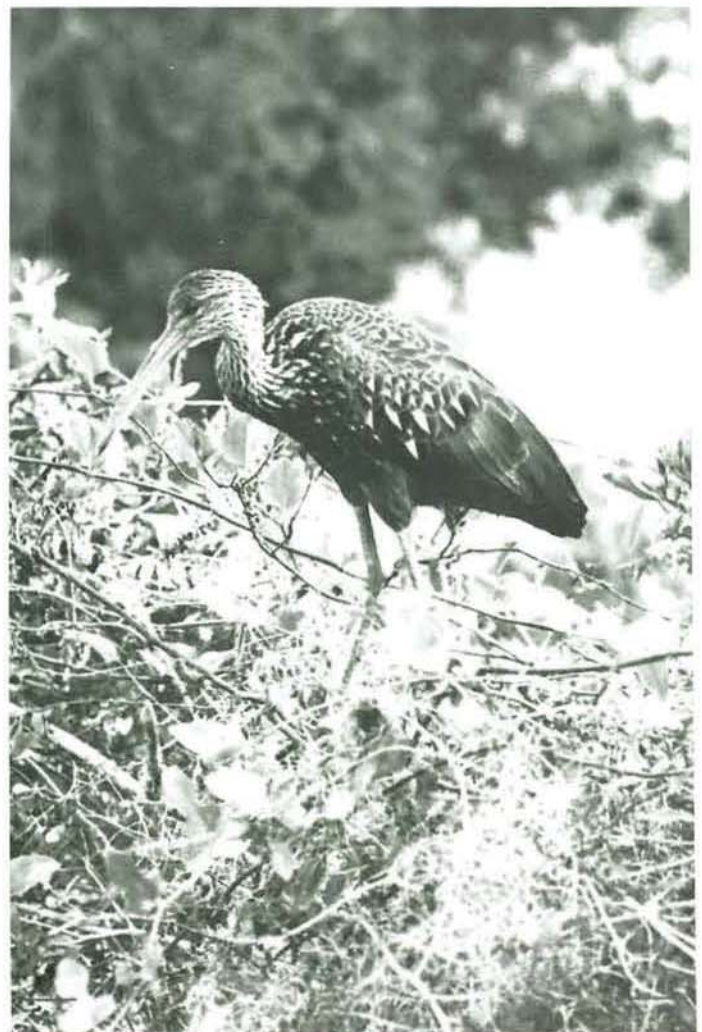
pine, and produce from the fields of cotton and corn. Successive eras of pole-boating, log-rafting, and steamboating—real sagas of Americana—went unheralded in the history books.

And yet, the river swamps remain one of the richest, most exciting, and most natural systems of all our southern environments. They come in three types, basically: alkaline, clear water, from underground rivers; red water, clay-rich and muddy, from the uplands of Alabama and Georgia; and acid, black water, heavy with organic compounds steeped from leaves and twigs in endless back swamps and feeder streams.

The river swamps are productive. Veneer factories feed from the gum logs. Otters and raccoons feast on the abundant crayfish, and little piles of empty shells tell of the presence of the limpkin, or "crying bird," which garners the rich snail crop. Countless other birds and squirrels eat the fruits of black gum, tupelo, and ogeechee lime; and tupelo honey attests the treasure store of nectar in the forest flowers. The huge acorn crop feeds the deer, the raccoons, and the black and mallard ducks which winter by thousands in river swamps.

The flood plain floor, with its cycle of alternating wetness and dryness, is the remarkable machinery that drives great pulses of life. Fish, their breeding

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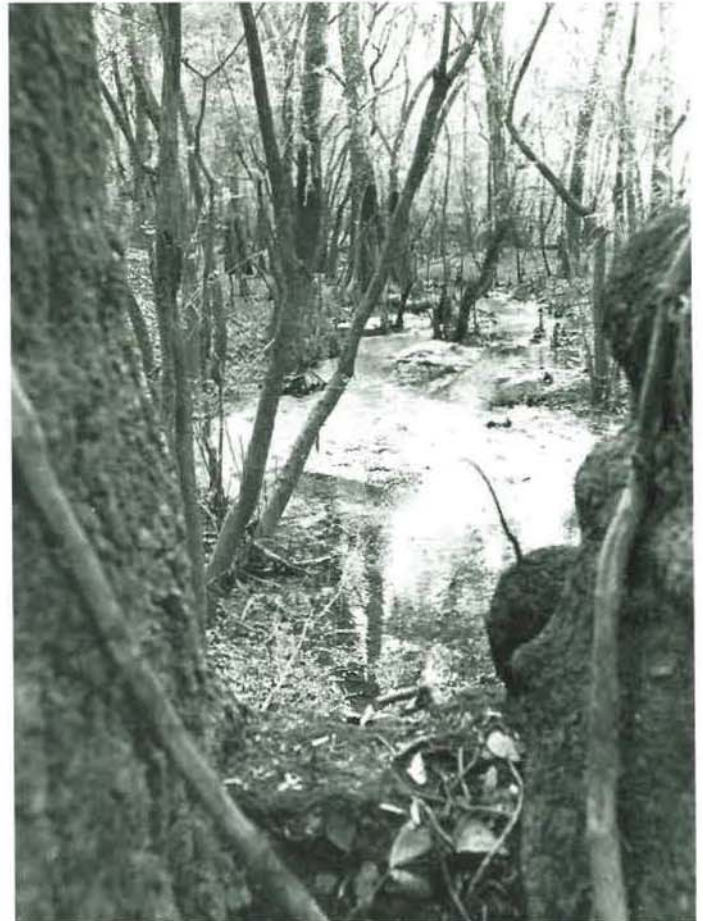
cycles timed to the first high water that escapes the channel, spread out over the flood plain and feed among the roots of oaks and hickories. Fattened and spent of eggs, they congregate back into sloughs and channels where the fisherman reaps a rich harvest.

In the larger red rivers each spring, striped bass, sturgeon, and three species of shad surge upstream, choosing select sections of the river in which to spawn, and their fry use yet other sections as nurseries. And the debris, coupled with the silt brought in with high water, always supports an incredible abundance of aquatic life—insect larvae and crayfish—that feeds the river fauna with a steady supply of drifting food. Indeed, the high productivity of crabs, shrimp, and oysters of some coastal estuaries and bays depends in large part, on the delivery of nutrients by our large river systems.

Though rich in iron and alumina from ground water, black water streams subsist largely on their own organic debris, flushing their swamps regularly of organically rich acid water. In the alluvial red water streams, typified by the Choctawhatchee and Apalachicola, the river and the flood plain trees team up in a partnership. Billions of tiny rootlets and their fungal extensions clutch the precious sediment to prevent its downstream movement, receiving as a reward a gentle blanket of nutritious silt at the time of high water. Vital to both systems is the annual rise and fall of water that inundates the flood plain and then flows off again, for the chemistry of the water and fallen leaves is inexorably linked to this eons-old fluctuation. And because of this unique cyclic intimacy between river and flood plain, between high ground and low, man benefits and has benefited for many years.

It was the Apalachee Indians who first denuded the red hills where Tallahassee stands. Their corn

helped feed the Spanish missions as far away as St. Augustine. Later, the cotton farmers on the hills of Alabama and Georgia sent 50,000 years of topsoil into the river swamps. But the swamps survived man's upland indiscretions, for they were adapted to catastrophe, and man was simply augmenting their natural function. It was our first indication that the river swamps could do things for us that we might well treasure as life support functions. And so we are



Photos By Mike Miller



Views of the flood plain floor, left and above. This rich and dynamic natural system is a factory constantly at work. The annual rise and fall of water is a vital part of intimate cycle that links river and flood plain. Raccoon, otter, and sturgeon are part of rich fauna of river swamp.



Photo By Wallace Hughes



Photo By Gene Smith



Photo By Florida News Bureau, Dept. of Commerce

led, in these energy-poor times, to take a closer look at the free energy of this natural system.

Not only do the swamps serve as giant sponges to hold water back from gravity's eternal pull, but they may be vital filters to clean our rivers of the wastes of an industrial and urbanized world. It has been shown that a relatively few hundred acres of river and flood plain can purify the wastes of a town of respectable size. With the rising costs of tertiary treatment, such potential cannot be ignored.

I once asked a farmer where an obviously polluted creek went. "Oh," he said, "just into that ol' swamp down there." Science is now taking note of those "ol' swamps." It is likely that river swamps have been saving southern communities millions of dollars by treating their secondary and tertiary wastes. Partially-treated wastes of the town of Wildwood, Florida have been disappearing into a nearby swamp for nearly 20 years. Tons of toxic nitrates and pesticides from farmlands, poisonous heavy metals from

industry, and even, in some cases, radioactive wastes, all have been processed by the river swamps, either bound to sediments and deposited out on the flood plains to be broken down or immobilized, or locked into harmless form by organic molecules and carried downriver into the estuary.

Such abilities have inspired an intensive study by the University of Florida's Center for Wetlands, to examine the potential of other swamps, such as cypress ponds, which are acting as inexpensive waste disposal units and, at the same time, growing trees faster.

Another little-known relationship concerns the fact that Florida's black water surface streams are inseparably linked to the dark caverns of underground rivers on which coastal zones depend for their water. Full with black, acid water in rainy periods, these streams pour underground to recharge the vital aquifer. In dry times, the role is switched, and the aquifers repay the debt and keep the rivers flowing.

As we attempt now to power-down society to some stable survival level, recognition of their life support role must go to natural systems. But how can we push them? Perhaps there is a point at which we can overload the machinery of the river swamps.

In the past, like a beer or bait can thrown off a river bridge, moving water was supposed to carry the refuse of civilization away from our life and memory. While the swamps are now devoid of the greatest trees ever grown in eastern America, and have often reeled with sweeping pulses of toxic wastes and eroded soil, they are still viable, productive systems. Can we keep it that way? Are there other threats? Yes, but we shall have to act, acknowledge natural function, verify its limits with science, and then protect it. Unhappily, there are sweeping changes possible that threaten these vital natural systems, mostly brought about by the combined power of large industry and government. These are

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Photo By Morrie Naggiar



Photo By Gene Smith

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not malicious attempts to destroy the shad fishery, or the acorn crop that feeds the deer, or the machinery that keeps the water flowing and pure. It is just that we are slow in recognizing the value of our river swamps. The next time your car hurtles along a river swamp bridge, reflect for a moment on the realm of muck and moss below. It has much to tell us about our past—and our future.

It is impressive to fly over the southern coastal plain. Through the endless tree farms of pine, the river swamps run like green corridors of life. They are the final refuges for deer, bear, and raccoon, where man and dog must pause. They are also the pathways of migration. Where raccoons were exterminated by rabies or the fur coat craze of the twenties, they could move northward up the river corridors and again populate their wetland heritage. Clams, destroyed by a toxic pulse of industrial chemistry, are repopulated by the drifting larvae from upstream.

But all is not well in our river greenbelts. Bereft of their original forests, and selling cheaply, the swamps have been quietly bought up by the large, wood-using industries. And now they want something out of them to show their stockholders.

It is proper that man should expect to profit from the productive wealth of river bottomlands. After all, some of the greatest civilizations flourished on the deltas of the world's rivers. (Until the building of the Aswan Dam, Egypt owed her life to the free gift of Ethiopian topsoil.) But with the life support functions of the natural swamp becoming more and more important to the man in the street, the traditional exploitation of bottomland forests becomes questionable.

Barge canals that provide tax-supported free transportation for shippers can quite clearly turn entire river swamps into shallow, over-rich biological nightmares. Heavy with roe, the shad, sturgeon, and striped bass visit the lowermost dam for a few years and then, their life span exhausted, come no more.

Having known only an occasional opening in the dense green canopy, from a storm blow-down, bottomland hardwood forests are beginning to be completely denuded in patches of many acres. The clear cut, a sensible means of managing pine forests, is now being applied to the hardwood forests of the river swamps. Sometimes the trees are even wind-rowed, and pines planted and maintained, by a heavy input of expensive mechanical and chemical energy, against the encroachment of the more wetland-adapted hardwoods such as sweet gum. In some areas, cottonwoods and sycamores are being planted for their high yield of pulp.

To encourage a few more pines, canals and vast channelization projects attempt to lower the water table along the upland tributaries that formerly hosted migrant fish which found in them a spawning and nursery ground safe from the predation in the large river. Bottomland hardwoods, deprived of a high water table, lessen their growth rate or succumb to disease.

Sometimes man, not understanding that river swamps must be allowed to rise and flood each year, attempts to improve on nature. This happened on the Chipola, where a series of highly productive old oxbows were impounded in the early 1960's. The unnaturally high water killed many trees, and the lack of natural draw-down and the disruption of yearly flushing led to a serious water weed and

eutrophication problem that was finally solved by new construction, at taxpayers' expense, that will imitate nature's original plan.

That water must get off a flood plain as easily as it got on has not been long recognized; nor, apparently, has the fact that landfills across flooded plains cause excessive silt deposition and flooding upstream.

While a ride down almost any highway will verify it, the west flood plain of the Escambia (State Road 184 bridge) is a case in point. On the south side is a magnificent, healthy forest of swamp black gum. On the north side, the spindly, sick, and dying trees tell their own story. To preserve a viable flood plain community, one crosses a flood plain on cement columns which do not interfere with the water flow.

As if the modification to the flood plains imposed by large industry and government construction were not enough, we must also acknowledge the threat of development.

Now that Florida's wild shoreline is mostly in private ownership, promotional interests are turning inland, to the rivers. Rows of second homes on bluffs, and houseboats anchored indiscriminately, may deprive the public of access points to the rivers, as well as blight the most scenic and historic places. Almost every river bluff along the larger streams was an Indian encampment or village, or mission, or trading post.

Man does not, of course, remember the mastodons and ground sloths. I doubt that he will mourn the passing of the swamp-loving Bachman's warbler, or the loss of the parakeet and the ivorybill. His spirit will be a little less, however, if the swallow-tailed kite, the limpkin, and the great sturgeon pass from

memory. There are modifications of the river swamp, however, that, I think, will impoverish his life very much. These are life support things that would affect the quantity and quality of his water supply.

And then there are less tangible—but no less vital—uses of the river swamps, as outdoor laboratories for school systems, and as extremely valuable river parks and scenic rivers for recreation. I see each year new fleets of canoes bringing the young, old, and disabled quietly and economically through some of the last wildernesses most of us will ever know.

On a good day, almost every sandbar will support a tent, and the renewable sands in front of it form a glorious, wild athletic field where the tracks of youth will be erased by the high water of tomorrow, to be ready for a new crop of voyageurs. And back beyond the jungle wall of the swamp forest, the endless rows of pine trees seem not to matter quite so much. What does matter is that, on the eve of discovering one of nature's last wild places, we find ourselves on the verge of losing it.

I suggest, as a bicentennial theme, that we reaffirm our partnership with nature, and that we especially acknowledge our bond with the river swamps. This environment not only cradles our most precious resource, water, but offers us perhaps the last place where we can feel a part of nature—isolated, wild and free.

Recognition of such a relationship acknowledges the heritage of an environment that was shared by the southern red wolf and the red Americans when Bartram viewed it 200 years ago. Such recognition is not penitence for our exploitation of the river swamp; it is reverence for the qualities which this green world can bring to our lives. ●

Photo By Gene Smith

Much draining of swamp lands has been conducted to provide additional acreage for planting of pines, left above. Hardwood logs, right above, are another valuable resource from river swamps. A quiet spot in Suwannee River State Park, right. The river swamps provide increasingly valuable recreation areas, and most probably the last wilderness most of us will ever know.





losing our dwindling sand habitat would be a sad chapter in Florida history

A Look At The Uplands

IN TODAY'S ATMOSPHERE OF environmental awareness, the value of Florida's wetlands, and the need to prevent further losses of these important wildlife areas, are becoming widely recognized. But our upland habitats, particularly the dry, sand communities, seldom receive favorable publicity, and their loss goes largely unnoticed. These habitats are important wildlife areas, especially for a number of rare and endangered species, and are an integral part of Florida's natural scene.

Two primary sand communities occur in Florida: the sand pine scrub and the longleaf pine-turkey oak sandhills.

William Bartram, a botanist who traveled through north Florida from 1773 to 1778, was one of the first to record the presence of the sandpine scrub, near Salt Springs, in what is now the Ocala National Forest. "On the left hand . . . as we turn our eyes southward, southwest and west, we behold an endless wild desert, the upper stratum of the earth of which is a fine white sand, with small pebbles, and

at some distance appears entirely covered with low trees and shrubs of various kinds"

Today, the sand pine scrub can still be recognized by its large expanses of bare, white sand beneath a dense, sometimes impenetrable tangle of evergreen shrubs and scrub oaks, with characteristic small, brittle leaves. Sand pines usually form the overstory, although a variation of the sandpine scrub, the scrubby flatwoods, may have no pine overstory or one of scattered longleaf or slash pines. What little ground cover there is usually consists of the aromatic rosemary, lichens, and prickly pear.

Because of their dry, often parched appearance, these habitats have not acquired a large following of admirers. Even botanists have occasionally looked upon the scrub with less than scientific objectivity, as this introduction to a 1931 survey illustrates: "The vegetation is mostly dwarfed, gnarled and crooked, and presents a tangled, scraggly aspect. It appears to desire to display the result of the misery through which it has passed and is passing in its



Photos By Brad Hartman

Relatively mature sand pine scrub, left, has dense tangle of understory vegetation. Longleaf pine sandhills, above, show open understory. Wet area in the foreground supports palmetto, gallberry, and wild azalea—an example of other habitats found within sandhill community.

By BRAD HARTMAN

**Assistant Director of Environmental Programs
Florida Game & Fresh Water Fish Commission**

solution of life's grim riddle. Here live the rosemary . . . and their associates rooted in a bed of silica, to which the term soil is but remotely applicable. Here the sun sheds its glare and takes its toll of the unfit."

The second sand community, the longleaf pine sandhills, can be recognized by its scattered longleaf pine overstory; the understory of turkey oaks, blue-jack oaks, and other xeric, or dry country, oaks; and a fairly dense ground cover of grasses and forbs.

Bartram also made reference to the sand hills in his writings. "These Sand Hills or Ridges, are the highest Land of those flat Sandy countries of the Sea coast of Carolina and Florida dividing the waters of different Rivers from each other, generally dry white

sand, they are generally, however, productive of grass and Palmettoes, various little shrubs . . . as well as good large Pine Trees of the long leaved species reckoned the most valuable, both for Lumber, and its yielding Turpentine, Tar and Pitch . . ."

Perhaps it was the early profits to be reaped from this community that led men to look upon it somewhat more kindly than they have the sandpine scrub.

Both communities were once common in Florida. While the scrub areas were most common along the central ridge that runs much of the length of the peninsula, and on old dune lines along each coast, the sandhills were less restricted, covering large areas of both the peninsula and the panhandle.

As previously indicated, these habitats are relatively harsh environments, and any plant or animal that is to survive must be able to cope with extreme heat and drought. Although rainfall is high, averaging over 50 inches per year in places, the loose, permeable sands allow it to sink beyond the reach of most plants and animals within minutes.

In order to survive, plants have adapted. Scrub understory oaks, for example, reduce transpiration water losses with heavily cutinized, waxy leaf surfaces; down-curved leaves; and hairy leaf undersurfaces.

Turkey oak, a dominant sandhill understory species
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cies, reduces its transpiration losses by having leaves which tend to be vertically oriented, thereby minimizing the area exposed to the sun's rays. Other common mechanisms are the small, linear leaves of the rosemary; and the extensive, shallow root system of wiregrass that captures as much water as possible before it is lost through the sand.

Animals must also avoid the heat, and one of the best ways is to go underground. Many scrub and sandhill species spend a major portion of their time either in burrows of their own or sharing space with the primary occupant of a burrow.

The sandpine scrub and the longleaf pine sandhills depend on fire to maintain their identity and to prevent a gradual change to a xeric hardwood forest. They differ markedly, however, in the type of fire regime which they require.

The sandhill community requires frequent, cool fires. Native grasses such as wiregrass are highly combustible. The leaves from the deciduous turkey oak and needles from the longleaf pine often become suspended in the wiregrass and provide additional fuel easily capable of carrying a light ground fire. These light fires control the invasion of hardwoods but do not affect the longleaf pine, which has adapted to fire.

With its thick bark and a high crown, the longleaf pine is probably the most fire resistant tree in the eastern United States, and is seldom damaged in most ground fires. In addition, reproduction in this pine is enhanced by fire, which provides areas of bare soil necessary for germination. To protect seedlings from these frequent fires, the longleaf pine concentrates its early growth, or grass stage, in developing an extensive root system while protecting its low-lying parts with a dense, insulating cluster of needles. After three to seven years in this stage, the seedling grows rapidly, often without branching, and elevates its growing bud out of reach of most fires.

Fire also stimulates the growth of a diverse and abundant variety of flowers, seed-bearing legumes, and fruits, many of which are important wildlife foods.

The scrub community functions a little differently. Lacking the grassy ground cover and leaf litter, cool ground fires rarely develop. However, the thick shrubs and the sand pine itself, with highly combustible branches growing almost to the ground, make the community susceptible to crown fires. When this type of fire occurs under natural conditions, the entire community goes up in a holocaust that may consume thousands of acres. Recovery is rapid, how-

Photo By Wallace Hughes



Photo By Don Ashley

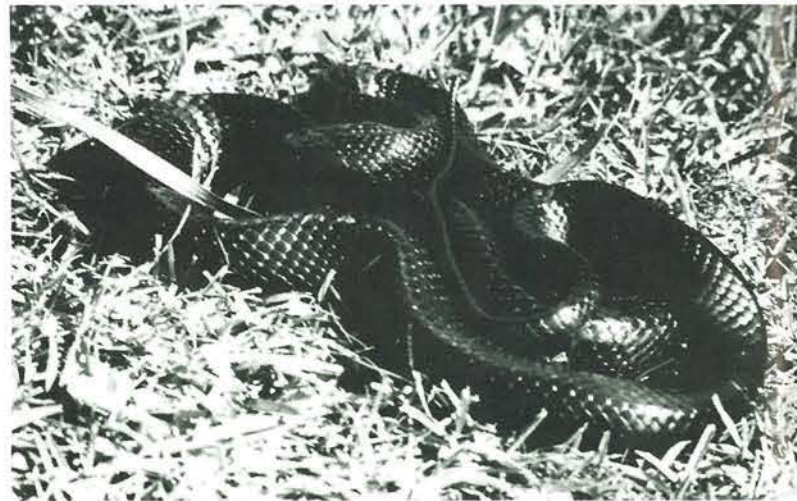
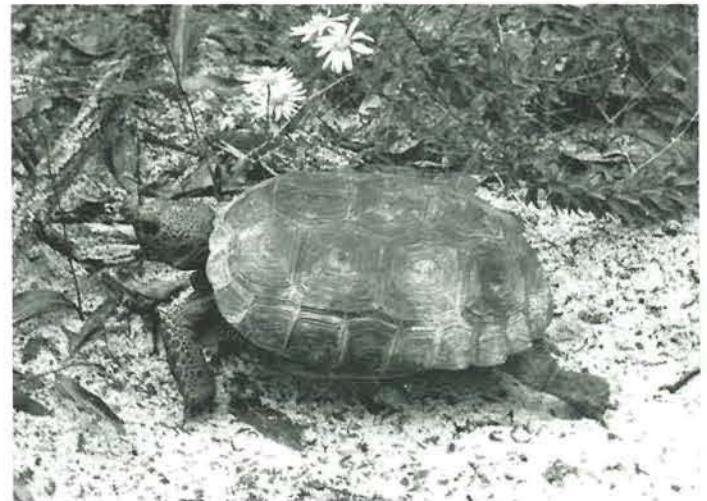


Photo By Brad Hartman



Photo By Wallace Hughes





Drawing and Photo By Wallace Hughes

Highly combustible wire grass blazes up in photo at top left, opposite page. Fire is important to maintenance of the sand communities. The indigo snake, as well as many other animals, profits from the burrows dug by gopher tortoise. A pocket gopher, above, leaves characteristic mounds, right, in its digging. "Salamander's" excavations bring soil nutrients back to the surface, where they are more readily available to plants.

ever, with many of the shrubs sprouting soon afterwards. The sand pine, which cannot reproduce in its own shade, and whose seeds often require heat to release from the cone, also benefits, with a new crop of seedlings being produced.

Wildlife values in these two habitats are high but not always visible to the casual stroller because of the burrowing nature of many species. Game species, such as deer in the sandpine scrub, and quail in the longleaf pine sandhills, are sometimes common, but the major value of these communities is as habitat for animals largely or completely restricted to them.

The gopher tortoise is a large (up to 18 inches long) land turtle that feeds on the leaves and fruits of understory plants. An extremely interesting animal in itself, the "gopher" is also important as a modifier of his habitat. Through his extensive burrowing, the gopher turtle "recycles" nutrients that leach through the surface sands. He also creates microhabitats for other animals which require the cooler temperatures and higher humidity available in these burrows. Animals inhabiting these burrows include such endangered or threatened species as the Florida gopher frog, indigo snake, and Florida mouse, as well as the rattlesnake, coachwhip, pine snake, and other snakes. Gopher holes also provide temporary quarters for larger mammals, including skunks, opossums, and foxes. A number of insects and other arthropods also live in these burrows, some being dependent on them for habitat.

The pocket gopher is another burrower in sandhill areas. The recent travels of this mammal are easily

noted by the sequence of sand mounds pushed up as it moves along beneath the surface, feeding on roots and tubers. A unique feature of this rodent is its external cheek pouches, in which it sometimes carries the vegetable matter on which it feeds. The pocket gopher, often locally referred to as a "salamander," is another species whose burrowing is thought to help in bringing nutrients back to the surface.

Some of the animals which occupy these habitats have their own unique solution to the problem of keeping cool. The sand skink, a small, shiny lizard found only in Florida, has become strongly adapted to a burrowing mode of life. This interesting reptile burrows, or, more accurately, swims, through the loose sand of the scrub. Legs would only be a hindrance in moving quickly through the sand, and the sand skink has responded by having greatly reduced legs. Small eyes, protected by a translucent "window" in the lower eyelid, also contribute to its burrowing existence.

Bird life is very much a part of the sand habitats. Towhees, thrashers, ground doves, quail, and the ever-present mockingbird are common in both habitats. The endangered Florida scrub jay, a more subdued (in both coloration and sound), crestless cousin of the bluejay, is common in early successional stages of the scrub, and is restricted solely to this habitat.

Another endangered species, the red-cockaded woodpecker, is found in the longleaf pine sandhills. Although not restricted to this habitat, this small woodpecker finds high quality nest sites in the mature longleaf pines of a sandhill community. The red-cockaded lives in small colonies, but with individual nest holes chiseled only in live trees infected with redheart disease. The telltale resin stains around the entrance holes often indicate the presence of these birds, whose existence is threatened by the reduction in availability of suitable stands of large pines in both the sandhills and in the more common flatwoods.

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The threats to Florida's sand communities and their wildlife resources come from many directions. On the individual species level, some animals, such as the gopher turtle and the indigo snake, may have suffered from "predation" by man; the former for food, the latter for sale as pets—a practice now illegal in Florida. The practice of gassing gopher holes to capture rattlesnakes can have adverse impacts on many of the species that live in these burrows; species which are more susceptible to gasoline vapors than either the intended victim or the turtle itself. However, loss of habitat is the major factor in the decline of most sand community species.

Large expanses of scrub and sandhill habitat, particularly in peninsular Florida, have been converted to pasture lands, citrus groves, and other agricultural uses, while other areas have given way to large residential developments.

Forestry practices have often changed the character of the sandhills. When the original longleaf pine was logged out, restocking was usually ignored. With the maze of roads crossing the sandhills and effectively serving as firelanes, the necessary frequent, cool, ground fires could not spread over large areas. Natural longleaf pine regeneration was greatly reduced, turkey oak flourished, and today we have turkey oak forests in which the only evidence of the native pine might be an old lighter stump.

In some areas where tree planting occurred, site preparation involved the destruction of the native wiregrass community so important in maintaining the natural fire regime. To further complicate matters, longleaf pine was not planted because of its slow maturation rate. Instead, slash pine, not nearly so fire resistant in its first years, was planted, and the fire prevention programs necessary to give this "exotic" pine a chance further altered the original cycle of fire.

Forestry activities in the sand pine scrub, on the other hand, have simulated, to some degree, the original fire regime. While there is some controversy

over forestry practices in sandpine scrub, certainly this community appears, at least superficially, well suited to clear cutting and site preparation.

Protection for these threatened habitats is almost nonexistent outside those areas in public ownership. The land is conducive to development, with few drainage or flooding problems, and many land-planning agencies, in an effort to keep development out of the wetlands, encourage the use of these sites.

The only effective means of preserving these habitats is through ownership by the public or by institutions that have habitat preservation as a primary goal. The largest single scrub community in the state is located in the Ocala National Forest and is managed for pulp production, wildlife, and recreation. Smaller areas are included in scattered state parks and private conservation holdings.

The longleaf pine sandhills are less fortunate. Although scattered areas are in public ownership, there are very few areas that retain the mature longleaf pine overstory and the wiregrass ground cover so widespread in Bartram's day. Some remaining areas are included in the Ocala National Forest, Blackwater State Forest, and on the vast Eglin Air Force Base.

The state's major land acquisition program, the \$240 million Environmentally Endangered Lands program, has thus far failed to buy areas of these habitats, although a number of proposals containing scrub are currently being considered.

The future does not appear bright for much of the remaining areas of Florida's sand habitats. Each new shopping center, each new "planned residential community," each new watermelon field, and each new improved pasture carved from our remaining wild areas reduces our wildlife populations and the diversity so essential for a high quality of life. The loss of the state's remnant dry sand habitats, a part of our natural heritage as much as our wetlands, would be an unfortunate chapter in Florida history. ●

Citrus groves occupy what was once sand pine scrub land. Other agricultural lands, pastures, towns, and highways also have replaced much original sandhill community. Some forestry practices have resulted in the replacement of the longleaf pine stands with turkey oak.

Photo By Florida News Bureau,
Dept. of Commerce



FLORIDA HIGH AND LOW



STATE OF FLORIDA
 PHOTO ELECTROGRAPH FROM EARTH RESOURCES TECHNOLOGY SATELLITE #1
 PREPARED BY DEPARTMENT OF INTERIOR—GEOLOGICAL SURVEY
 in cooperation with
 The Central and Southern Florida Flood Control District
 and the
 National Aeronautics & Space Administration
 UNCONTROLLED PHOTO MOSAIC—PROVISIONAL COPY
 Date of Photo Compilation: October 1972–April 1973
Directed by James R. Smith, Satellite Photo Unit

NAUTICAL MILES
 0 25 50 75 100 125
 STATUTE MILES
 0 25 50 75 100 125

You are looking at fragile Florida from 500 miles in space, as seen by the cameras of Earth Resources Technology Satellite 1 (ERTS-1), launched in July 1972 to aid foresters, fish and wildlife managers, geologists, hydrologists, cartographers, oceanographers, agricultural scientists, and others in solving down-to-earth problems. Vegetation shows as red and pink, water as black and blue, and concrete and asphalt as white. Remote sensing from space has already proven its worth, and scientists are confident that detailed inventorying of land and water by satellite will aid in discovering and heading off future environmental problems. Florida has 54,136 sq. mi. of land, 4,424 sq. mi. of water, and 8½ million people—nearly 2½ million of whom reside in Dade and Broward counties. On the following pages are some closer looks at a few of the habitat features and wild creatures that make Florida's unique environment worth saving.



Photo By Florida News Bureau, Dept. of Commerce

A view of the Everglades, left. Not only is it a stronghold of wildlife and a highly important recreational area, but its hydrological and biological functions are vital to the continued well-being of the south coast's concentrated human population. During drought times in the glades, gator holes may provide the only surface water available to area's fish and wildlife. Gallinule, right, pauses at the edge of the marsh. The roseate spoonbill, right below, is one of the considerable variety of wading birds that find the habitat of Florida compatible with their needs.

Photo By William Greer





Photo By Jim Greene

Photo By Florida News Bureau, Dept. of Commerce





Photo By Cypress Gardens

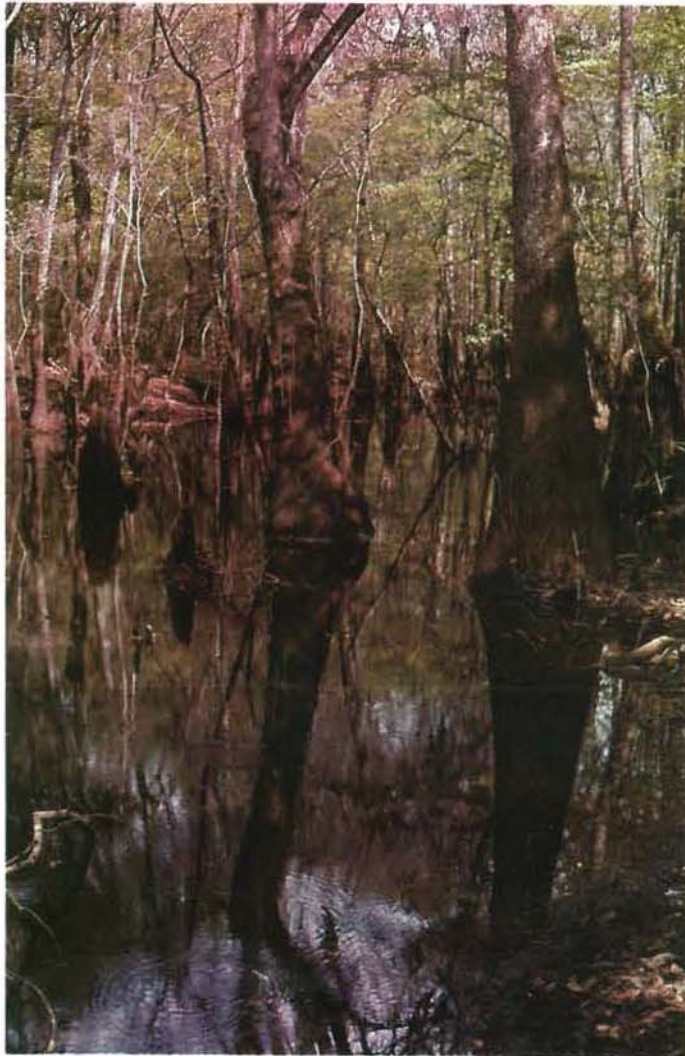


Photo By Mike Miller

A post-World War II recreation boom saw number of fishing licenses issued increase in one 10-year period by 900 per cent. Despite the number of fishermen, Florida still has an abundance of waters where elbow room is no problem. But a concerted effort is needed to safeguard this valuable resource, which has suffered from shameful abuse in many cases. River swamp, left, is a valuable natural system producing forest products, fish and wildlife, trapping silt from flood waters, and cleaning up some types of pollution. The St. Johns River, below, at the north end of Lake George, is a renowned fishing stream that's still a producer despite fact that it's had rough, careless treatment.

Photo By Gene Smith





Photo By Wallace Hughes



Photo By Larry Martin

Photo By Jim Greene





The red-cockaded woodpecker is a bird of the pine woodlands. The strings of pitch dripping from wounds inflicted in the tree by woodpecker are characteristic of a nesting tree being used by this species. A white-tailed buck poses at the edge of a forest clearing. Carried on throughout the state, management efforts directed toward the deer benefit many other species of wildlife. A raccoon is a common member of state fauna, being found in a variety of habitats, but seldom far from water. The vista of open ground in photo above is a portion of Paynes Prairie, a protected natural area near Gainesville. The marsh prairie habitat is home to a variety of wildlife. The bobwhite quail, below, is an esteemed game bird throughout the south and is the object of considerable management effort on the Commission's part.

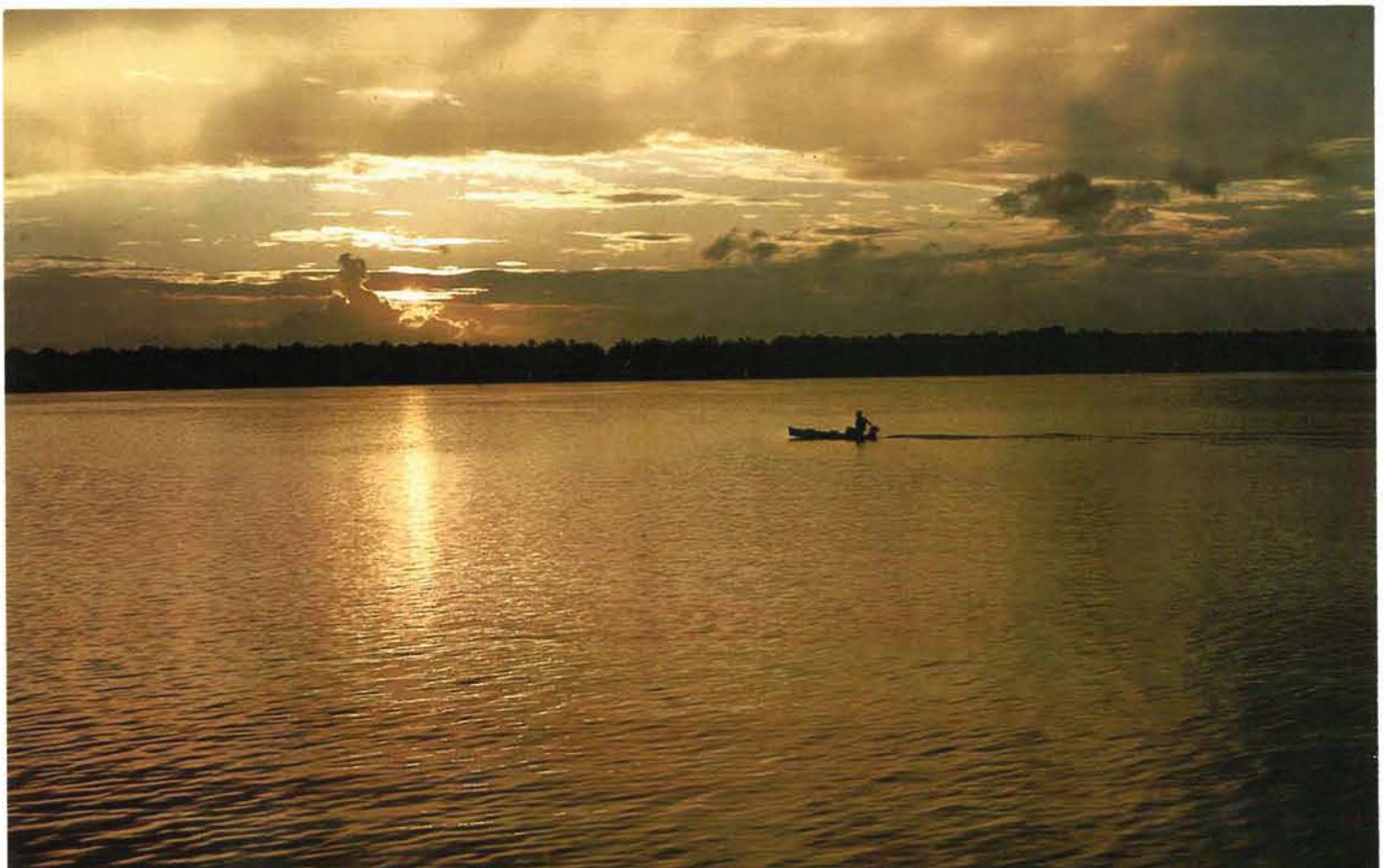
Photos By William Greer





Florida's beaches, a major recreational resource and a magnet for thousands of tourists, have been subjected, in some cases, to degradation by poorly-controlled development. This, above, is what is at stake—a nearly pristine west Florida beach. Beauty and tranquillity are common commodities on a Florida fishing lake, below, but action is necessary to protect and enhance this vital part of our natural heritage.

Photos By Wallace Hughes



there have been lots of changes in law enforcement since '97

The Thin Green Line

By **BRANTLEY GOODSON**

**Director of Law Enforcement Division
Florida Game & Fresh Water Fish Commission**

THE VERY FIRST GAME WARDEN was probably a crusty codger who knew most everyone in his area by first name and was known by all of them. Anyone he encountered that he didn't know was most likely a foreigner (out-of-county) and needed to be sized up carefully. Folks depended on him to look into things like that; to insure that "outsiders" didn't make a habit of hunting game in their county too often without being talked to.

He was characterized by an easy-going, independent style, and he probably despised anybody who said hurry up. He was deliberate, knew the ways of the woods, and had a special flair for dealing with people. Riding a horse came second nature to him, and he often trod the banks of the creeks he knew so well—sometimes because he had something to do, but mostly because he wanted to.

Game was plentiful during his day, and he probably knew more about the ways of birds and animals than anyone else in his parts. He knew when the deer were walking and the turkeys were feeding, and he could follow most any ridge or creek swamp to the best hunting spots.

He could, that is, when he wasn't tending his farm or livestock, jawing on the country store stoop, attending church socials, or drumming up a few votes for his favorite candidate in the upcoming election. He only worked part-time as a game warden, and, after all, he felt like he could accomplish an awful lot by just visiting with people or attending a neighborly get-together. During such gatherings, he might take the opportunity to let the local grocer know that his boy was doing a little "firehunting" and needed a talking to. That was the first game warden's way. He liked people and they liked him, and he probably did a lot more counseling than he did enforcing.

The year was 1897, the first year game wardens were officially appointed. These first wardens were appointed by the Governor in any county where a petition was signed by at least 50 freeholders. They served a term of four years and were paid by the county. Obviously, to receive an appointment as game warden, it was essential to know most of the local politicians—and even more important to gain their favor. This was the biggest problem that faced early wildlife law enforcement, since political appointments almost always led to more than a little favoritism. A man couldn't very well expect to receive a second four-year term if he fell out of favor with the locals.

It was a simple, easy-going time, and not much concern was really expressed for the state's fish and wildlife resources. The game and fish were abundant, and there seemed to be no end to nature's bounty. Glowing reports by hunters of the day, such as Charles Cory, attested the abundance of deer, bear, panther, quail, and ducks, in the frontier state.

Once while quail hunting on Dago Prairie, near Enterprise, on the St. Johns River, Cory told of "finding 14 coveys, killing 82 birds with a twenty gauge gun and reaching the hotel before dark."

His hunting companions of the late 1800's could claim equally impressive game bags. Like John Davis, who took six panthers in a single season

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In earlier times, the game warden was very much at home on a horse. He knew almost everyone in his county, and they knew him. His job was usually a part-time one, and he might well spend more time counseling than making arrests.

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from the cypress swamps of Long Hammock and Custard Apple Hammock, near Lake Worth. And O.A. Quartermain, who took 51 deer and 14 bears in a single season, and was described by Cory as "the best hunter on the Indian River."

With such a supply of game, laws restricting bags or establishing hunting seasons were generally considered an unwanted and useless aggravation—unless they furthered a local interest.

The first recorded Florida conservation law was passed in 1828 and prohibited firehunting west of the Suwannee River. Many of the early laws, however, were designed more to monopolize the fish and wildlife resources of a country rather than protect the resource. An 1850 law regulated camp hunting in Escambia and Santa Rosa counties, and limited hunting parties to five persons. In 1885, another camp hunting law was passed prohibiting residents of other states from camping in Florida for the purpose of hunting. In 1866, Lafayette and Taylor counties attempted to prohibit hunting there by residents of other counties.

During the first session of Florida's legislature after admission to the Union, in 1845, one of the few fisheries laws for the common good was enacted. This act made it unlawful "for any person to be engaged in catching fish for the Roes only, or in any manner wantonly destroying the fish in any of the rivers, harbors, bays or on the coast of this state." Most fisheries laws were more provincial in nature, however, like an 1855 act which prohibited the use of haul seines by non-residents when fishing Lakes Iamonia and Miccosukee in Leon and Jefferson counties. Another law passed in 1858 prevented citizens of other states from fishing in certain lakes near the Georgia line, and an 1881 law restricted commercial fishing to the residents of the state.

With such disparity in local hunting and fishing laws, the game warden was limited to enforcement within county lines, and no overall enforcement scheme was even considered.

Wildlife law enforcement in Florida during the late 1800's and early 1900's was at best an uncoordinated attempt by the counties to take care of their own interests. The situation, brought about by a growing maze of local regulations, is probably best described in a statement made in 1913 by the first director of the recently created Department of Game and Fish. During an address to the Legislature he remarked, "As all men know, it is one thing to enact laws and another thing to enforce them The laws are so poorly drawn and the hunting seasons so overlap that enforcement is impossible."

Unfortunately, the confusion arising from a lack of common direction were to persist in varying degrees for the next 30 years. Responsibility for game and fish protection and management was vested periodically with numerous state departments during the stormy years preceding the 1940's.



Photo By Laurence Rossignol

Today's wildlife officer must possess the basic skills of his earlier-day predecessor, plus a greatly-expanded knowledge of many related matters. Completion of rigorous training program is requirement for aspiring officers.

This bureaucratic shuffling of responsibility blocked all attempts by any one agency to develop and implement a truly effective enforcement program. Passage of local laws and their inherent inconsistency continued at a staggering rate, and by the 1940's, the sportsmen of Florida were to support a move that would attempt to eliminate local politics from the establishment of game and fish laws, and pave the way for a more effective enforcement program.

When the Game and Fresh Water Fish Commission was created in 1943, there were 166 local hunting and fishing laws on the statute books. The new Commission, however, was to begin an earnest attempt to standardize the laws affecting fish and wildlife resources. Their protection and management was a complex task hindered by a rapidly expanding population, a gradual reduction in open hunting land, greater demands on game and fish populations, and increased pressure on all the state's natural resources.

A growing list of regulations were necessary to protect the resources from overexploitation or de-

struction while still permitting wise utilization of managed species. Seasons had to be established, bag limits enacted, and controls placed on the methods of taking fish and wildlife. Later, special regulations for hunting on management areas had to be adopted. Hunting and fishing became, by necessity, a strictly regulated recreational pursuit. Perhaps the most dramatic shift of attitude during the 1950s and 60s was a growing sentiment that all the state's fish and wildlife resources be considered—not just game species. Laws were needed to further protect nongame animals and insure their continued welfare. A growing concern was also beginning to be loudly expressed by the public for the "total environment."

It was evident that the basic skills of the early game warden, who simply knew the woods and knew the people, were no longer sufficient qualifications. The broad-based wildlife enforcement program of the 1970s demanded greater versatility.

The game wardens of 1897 would understandably be amazed and somewhat bewildered at the changes in their profession during the last 75 years. During their time the sum total of a wildlife enforcement program included little more than protecting the more visible and desirable game species. As long as an effort was made to protect the deer herd and turkey population, the citizens were generally happy.

Photo By William Greer



Game was plentiful, open hunting land was easy to find, and there simply were not that many hunters. Florida's population when it gained statehood in '45 was barely 58,000 residents, and most of them were concentrated in the "civilized" northern third of the state. By 1960, that figure would grow to 5 million, and in 1974 it would exceed 8 million!

Today's wildlife officer is selected on the basis of his education, experience, and expertise in the field of wildlife law enforcement. These basic qualifications are then improved by a series of training programs designed to prepare a new officer for the demands of his varied responsibilities.

As a state law enforcement officer with peace officer powers, he must complete a minimum 320-hour Police Standards Board curriculum. During this training he is exposed to such subjects as search and seizure, laws of arrest, constitutional law, rules of evidence, case preparation, court demeanor, defensive tactics, firearms proficiency, and a host of related enforcement topics. A wildlife officer today might be better described as a professional law enforcement officer who specializes in wildlife law. He is called upon to assist other enforcement agencies during civil disturbances, natural disasters, and other emergencies. Since he often patrols wilderness areas where he may be the only enforcement officer for miles, he must enforce all the state's laws when violations are encountered.

His training as an enforcement officer is not finished, however, with the completion of basic police standards requirements. His primary charge is the field of wildlife law, and he must be prepared for the demands he will encounter. In a Wildlife Officer Training School he will learn the statutes and regulations protecting the state's fish and wildlife resources. In addition to the hunting and fishing regulations, he must know the state and federal laws affecting nongame species, endangered species, pollution control, dredge and fill, boating safety, import restrictions on exotic species, and many others. The wildlife officer also receives training in subjects that improve the practical skills necessary for his outdoor-oriented profession. Subjects on wildlife identification, tracking, alligator handling, specialized equipment operation and maintenance, and numerous other topics are all designed to prepare the officer for his varied and difficult job.

As a young recruit wryly commented a few years back, "With all this training, I ought to be pretty smart, but I'm kept so busy I don't have time to think and find out."

Armed with their knowledge of the job to be done, and reinforced with a dedication to carry it out, the wildlife officer accepts the challenge of protecting this state's natural resources.

During hunting season he will patrol the millions of acres of managed and private hunting lands,
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enforcing laws designed to insure wise utilization of renewable game resources. As spring approaches, he will patrol the lakes and rivers assuring compliance with fishing regulations and boating safety laws. He will find himself spending a great deal of time enforcing laws protecting nongame species—and even more time responding to public complaints about nuisance wildlife problems.

It is difficult to imagine what the status of many species of fish and wildlife in Florida would be without the enforcement efforts of the past few decades. It is doubtful that we could claim a thriving deer population if the illegal gun was not controlled. It is equally doubtful that many of the small game species would be as abundant as they are without closely regulated taking.

The protection afforded songbirds and wading birds has unquestionably helped insure their continued existence and perhaps even helped emphasize their value to man and his environment. For example, if the commercial slaughter of wading birds for their feathers, so prevalent in the early 1900s, had continued unchecked by enforcement of stiff protection laws, it is doubtful that many egrets or herons would grace our lakes and streams today. They could easily have been a part of Florida's "lost heritage" rather than an intrinsic part of its natural beauty.

In addition to the wildlife officer's primary duties, the enforcement program of today demands greater specialization than was necessary in the past. An inspections unit was created to be responsible for the enforcement of laws dealing with humane treat-

ment of captive wildlife, the importation of exotic species, possession of wild animals as personal pets, and for numerous fish and wildlife permitting procedures.

As a tourist state with a mild climate, Florida is number one in both the number of wildlife exhibits and volume of imported exotic animals. In one year, more than 30 million specimens of fish and wildlife will be imported through Miami and Tampa, designated ports of entry. An additional 60 million specimens of tropical fish will be raised and marketed by the hundreds of tropical fish farms in central and southern Florida. This state's diversified habitat and receptive climate make it essential that laws designed to control this industry be effectively enforced.

The illegal commercialization of fish and wildlife has also led to the creation of an investigations section to deal with the taking and selling of protected wildlife by organized market hunters. Working in an undercover capacity, these officers attempt to infiltrate known groups of market hunters and obtain evidence, over a period of 6 to 12 months, that will effectively reveal the extent of these violations to the courts.

Although the taking and selling of deer and game fish are the most often encountered violations, an investigation will often expose illicit operations involving alligator hides, narcotics, rustled cattle, and other stolen property.

Undercover investigations are expensive and time-consuming endeavors, but they are an essential part of a modern wildlife law enforcement program.

It would be easy at this point to rest on the laurels



The airboat, left, is indispensable in getting about in areas where there are vast stretches of shallow, heavily vegetated water, a common condition over much of the state. A 24-hour radio communications system is a vital part of efficient enforcement program.

Photo By Jim Reed



and progress of years past. We have come a long way from the early game warden to the present wildlife officer. Unfortunately, the enforcement efforts of today will not meet the needs of the future. With an estimated 6,000 people moving to Florida each week, it should be clear that, despite all our efforts, we may travel a bumpy road only to find a dead end street—unless a better long-range plan can be developed and implemented. If the state's projected population reaches 10 million by 1985, what will the year 2000 offer? How much concrete, asphalt, development, and people-pressure can the state's fish and wildlife resources take and still exist?

It is difficult to quantify the role environmental law enforcement should play in finding the answers to such complex problems. It is not difficult to understand, however, that we cannot afford any regression in our fight to conserve and preserve this state's natural resources.

Two years ago, the law enforcement personnel of the Game and Fresh Water Fish Commission were working an average of 60 hours a week trying to keep pace with the need for better wildlife law enforcement. Last year, implementation of a federally-mandated 40-hour week for wildlife officers cut drastically into the available man-hours, and we estimate a loss of almost 50 man-years of enforcement time.

It is hard to absorb such a blow when there is more to be done each day. If we were to take every

field enforcement position we have and put them all on duty at the same time, each officer would roughly be responsible for more than 185,000 acres, or 289 square miles. Obviously, they cannot all work at the same time under a 40-hour week. On an average, there are fewer than 50 officers on duty throughout the state at any given time. For comparison, each officer is then responsible for an average of almost three quarters of a million acres, or more than 1,000 square miles!

Frankly, we are more than a little fearful of losing ground. We are not without the desire or know-how to continue an effective enforcement program, but we are without the manpower and financial resources necessary to do more than just hold the line. There is so much to be done, but so few can only do so much for so many with so little.

The State of Florida encompasses more than 37 million acres of land and water. The state's population will continue to grow at a phenomenal rate, and available fish and wildlife habitat will decrease accordingly. How will we insure for generations to come quality hunting and fishing, the chance to glimpse an eagle and the opportunity to experience the outdoors unobstructed by misuse, greed or massive development? By what measure does this state hope to combat the human onslaught that is gradually devouring these opportunities?

It may well be that just as the enforcement efforts of the early Game Warden would be useless against the problems of today—perhaps our current enforcement efforts will be useless against the environmental problems of tomorrow. It is easy to find yourself so busy trying to meet the rigors of historical responsibilities demanded by the public, that it is difficult to recognize the day when priorities should be reexamined and even altered.

We may be able to continue effective enforcement of the bag limits placed on game fish, but how do we deal with the culprits of water pollution that may destroy thousands more fish than a navy of irresponsible fishermen? We may protect the deer from the destructive tendencies of an unscrupulous hunter, but how do we combat the indiscriminate and illegal use of pesticides that may kill thousands? How can the people of Florida expect fewer than 200 wildlife officers to meet the demands of today and still help prepare for the greater challenges of tomorrow?

Obviously, environmental law enforcement will not be the sole answer to all our future environmental problems. But enforcement of the laws designed to protect the resources will be an essential part of any effective long-range program. The important point is that we are eager to examine and assess the worth of present enforcement priorities and seek a direction that will fulfill our responsibility of protecting the natural resources sought by sportsmen, hikers, campers, canoeists, bird watchers and others during the next two hundred years. ●



Photo By Florida News Bureau, Dept. of Commerce

years of investing in resource education is paying off, but we're just now

Approaching The Narrows

AS WE APPROACH OUR COUNTRY'S two hundredth birthday, we will commemorate many battles and important events. All over this nation, governments, groups, and individuals are restoring significant landmarks and re-enacting dramatic events. Peculiarly, the most unique monument to our history is largely being ignored by bicentennial celebrants. When our ancestors pledged their lives, fortunes, and sacred honor to this fledgling nation, it was a wilderness.

Early American history is rich in nomadic folklore, and names like Boone and Crockett spark the imagination. By 1776, while some were engaged in a nasty little argument with His Majesty, King George III, others were blazing trails westward and becoming American pioneers. They cleared land for farming, built cities, leap-frogged across fruited plains to win the West and replace complex wilder-

ness systems with simple ones. For all the adventure and good reading it makes, it was a path leading directly to today's serious threats on our environment. Once-lush woodland and species-rich prairies disappeared to make room for "amber waves of grain."

More and more people became Americans, and frontiers pushed west and even south. There seemed plenty to go around, and our natural resources, including wildlife, seemed a bottomless barrel. Who among us can now wave an admonishing finger at those hardy individuals who made a living from providing the need of wild game and birds to a town dweller? Who then could imagine that a country so vast would one day be urbanized from Canada to the Gulf, from coast to coast? The need for conserving our natural resources was apparent to but a few.

In all fairness to our forefathers—who were caught up in the spirit of building a new nation, and probably because it was gradual—environmental deterioration was little noticed and infrequently associated with its causes. Although warning signs were flashed by a few, like Henry David Thoreau, who watched a wilderness world deteriorate around his Walden Pond, people seldom considered such words to be factors that would limit future growth.

The sudden realization that the great wilderness adventure was ending, and that we could see the bottom of the natural resource treasure chest, came as a fearful shock to many people who believed that our natural wealth was boundless. Yet the momentum of unlimited use of wildlife and natural resources was difficult to check. To make it worse, the land was filling up with a rapidly-growing population, and there was an ever-increasing demand for greater resource use.



Photo By Bob Brantly

A small minority began to press the message of the importance of preserving that of our unspoiled land and resources which might be valuable to us. These voices were few, and the audience selected were kindred spirits: other fishermen, other hunters, and other outdoorsmen who would nod in agreement and say something should be done. And, something was done.

John Madson of the Olin Corporation Conservation Department said it best in the booklet *Game, Gunners and Biology* when he wrote, "Our big game was just about one trigger-pull away from extinction . . . "when" . . . in our darkest resource crisis, a young Vice President named Theodore Roosevelt assumed leadership of the nation. It was one of those eleventh hour rescues that have come at other times in American history."

"During his eight years in office, Roosevelt introduced the nation to an entirely new concept of resource management. Believing that he was a servant of the people, he acted swiftly and strongly to protect the land and its wildlife.

Roosevelt, considered by many as the father of conservation in America, did, with his soft voice and big stick, manage a sweeping change in wildlife and natural resource laws. The new conservation laws, however, were not widely accepted, and, to the deep concern of the sportsmen-conservationists, illegal market hunting and uncontrolled pillage of the nation's resources continued while countless citizens, unaware of the headlong destruction, screamed like banshees at the thought of restriction of their unregulated right as citizens.

One cannot help but wonder what the results might have been had Teddy Roosevelt applied his

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Photos By Florida News Bureau, Dept. of Commerce

By JAMES T. FLOYD
Director
Information-Education Division
Florida Game & Fresh Water
Fish Commission

In the years ahead, competition for open space will increase. It is important that the public be aware of and practice wise use of the environment. Without conservation communication, public awareness of wetlands values may be slow in coming, and more ponds, potholes, and marshes will be drained to make room for crops and developments. Protection of wildlife is of little value without the protection of wildlife habitat, and this requires informed, concerned public.



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soft voice to conservation communications with the same degree of vigor he used to apply his big stick to conservation laws.

Without conservation communication, public awareness was slow in coming, and more and more land was planted in crops; more and more wildlife fell victim to both unlimited harvest and habitat change. Human dependency on technology and the deterioration of the environment kept stride. Agriculture permitted dense urban populations, but urbanization required wood for building and for fuel. Metropolitan centers soon became conspicuous by their deforestation. Loss of forests changed climates, altered watersheds, and increased soil erosion. Careless mistakes would bring about the life-shattering Midwest Dust Bowl of the Depression years.

Throughout the nation, the spirit of conservation was beginning to catch on. Sportsmen were becoming concerned and formed such organizations as the Boone and Crockett Club and the American Game Association. These sportsmen were realizing that while management of natural resources was crucial, the need to educate and inform the public was of even greater importance. Recognition of this need was perhaps the birth of the practice and art of conservation education.

Perhaps the first man to make full use of the public media as a vehicle for widespread conservation education purposes, and surely the loudest voice during the early 1900's, was not a political leader but an avid hunter from the marsh-strewn prairies of north-west Iowa. Jay N. "Ding" Darling, an Iowa newspaper cartoonist used his pen to point out the plight of America and wake up the public. (See this month's "Florida Wildlife Scrapbook" on the inside front cover. — Ed.) Ding gained a reputation for not pulling his punches; he drew perceptive, brilliant cartoons of resource waste and pollution, earning two Pulitzer Prizes. While many sportsmen and conservation leaders recognized the need for public support and involvement in conservation practices, it was Ding Darling and a handful of writers that led the way toward broader public acceptance and understanding of the wildlife and natural resource dilemma.

During the early 1900's, a young forester developed a philosophy for wilderness conservation that may have been fashioned for the naturalist but reached the higher echelons of government. The world, and the wildlife of the world, is richer today not just because of Aldo Leopold but because of his ability to communicate his scientific observations to a waiting public. Libraries are filled with volumes of valuable scientific texts documenting wildlife and natural resource facts. They gather dust or, on infrequent occasions, are reviewed and studied by other scientists. Seldom do these valuable works find their way into the language of the citizen. The result is that scientific study begets

scientific study. But the studies of Aldo Leopold were put to music with a broad public understanding, and a nation listened to this different drummer and began to change the cadence of the headlong march toward wilderness and wildlife destruction.

Across the nation, conservation agencies were being created to protect and manage the wildlife and natural resources of America. These agencies did recognize the need for conservation education and public understanding and support for wildlife programs, as witnessed by the 1930 biennial report of the Florida Department of Game and Fresh Water Fish. This report said: "In the State, in the Nation, conservation practices that fail to meet the needs of today are being discarded and others substituted. In such transitions, knowledge of the field of activity, of the activity in related fields, of the life that will be affected by change, is essential as a safe foundation on which to base change. Not only is such knowledge important as a safeguard against error in procedure, but, given publicity, it becomes a mighty force in securing conviction on the part of the individual as to the need for change from the old

Early conservation themes appeared as a series of shall and shall nots shaped as management recommendations and wildlife laws. However, there have been few dollars earmarked for conservation education that would help gain support or understanding for either concept. Sportsmen, below and left above, have influenced conservation of wildlife and natural resources more than any other segment of our society. Voices of conservation are in greater numbers than ever, but the public still needs to know about degradation of natural resources, at right above, and what can be done about it in the future.

Photo By Jim Reed





Photos By Jim Floyd

order, and an understanding and sympathy for the new."

This noble sentiment, however, was not backed up by much clout. The total information and education program was carried out by the clerk of the department, including office and field activities, and funding for the program rated at the bottom of the scale.

With the passage of time, the informational and educational programs of the wildlife agencies began to expand to meet the demands of a society for information on how to slow the spiraling downward trend of wildlife and other natural resources. The messages that had been preached by hunters and fishermen for years began to find a new and larger audience. Dollars from Federal Aid programs supplemented scientific research studies into the theretofore hidden life of animals and fishes. The conservation theme appeared as a series of "Thou shalt nots" shaped as hunting and fishing regulations designed to protect wildlife, plus an equally complex listing of "Thou shalt" in the form of recommendations for wildlife and fish management. Unfortunately, there were few dollars earmarked for conservation communication that would gain support or understanding for either concept.

Some citizens argue that modern conservation should be divided into two eras: B.C. and A.C.—Before Carson and After Carson, the late Rachel Carson, authoress of *Silent Spring*. Like the Minutemen of Lexington and Concord, her book was a "shot heard 'round the world" and did much to awaken the American environmental conscience. Prior to 1962, when *Silent Spring* alerted the public to the misuse of pesticides, environmental problems were blamed on bad weather, bad luck, fate, or the will of God. Research scientists knew the truth but lacked the expertise to translate their findings to a mood music that would create a public sympathy

for Nature's plight. Rachel Carson was above all else a communicator for conservation. She removed the dust from the research studies and told the story in a language that would in one way or another touch the lives of every man, woman and child not only in America but throughout the world.

The nation's mass concern over the environment triggered by *Silent Spring* perhaps climaxed in 1970 with the first Earth Day. There is little doubt but that the message of the book provided a foundation for Florida's greatest public-supported legislative actions as witnessed by Conservation 70. While the public environmental demonstrations may appear to have begun a slowdown, there is throughout the world a broader knowledge and understanding of the total environment, and the strong voice of the hunter and fisherman continues to prove a sounding board for the total environmental support scene.

It is said that the nation that does not learn from history is doomed to repeat history. A look at our own Florida history will show a waste of wildlife and natural resources in the name of progress, and still there are those who clamor for drainage of wetlands, channelization and damming of rivers and streams, destruction of wilderness habitat for developments, and the writing off of yet another eutrophic lake. It's difficult to learn from history without history teachers.

A recurring theme sounded by wildlife managers has been, "We have the knowledge and the ability to manage wildlife and wildlife habitat. What we need is the knowledge and the ability to manage people." This knowledge and this ability is available, but, unfortunately, the benefits of conservation information and education are somewhat intangible; consequently, the total effort and total dollars dedicated for conservation communications is a matter taken far too lightly. ●



Photo By Lovett Williams

WILDLIFE HAS PLAYED AN IMPORTANT part in the history of Florida from the time of the earliest settlers to the present day. Early explorers depended heavily upon wildlife for food during their travels and later when they established settlements and towns.

In a letter to Governor Cabrera written in 1686, the Spanish explorer Marcus Delgado wrote, "If it had not been for the supplies of powder and ball which Your Excellency sent to us, I do not know what might have happened to us, for by the grace of God the guns have sustained us, killing deer and other animals." In those days, wildlife even provided a method of travel, as boats made from green buffalo hide were used to cross the Ochlockonee River on a trip from St. Augustine to Apalachicola.

Early Floridians, like those of today, appreciated the abundance of wildlife on the land, both as a potential source of food and as an object of beauty and fascination. Clement Clay, writing to his brother in 1851, near present-day Lakeland, observed, "On rising just before day, we heard the wild turkeys gobbling in the thick woods on the water's edge near us, in concert with the whooping of the red-headed cranes and the hooting of the owls." Hunters were great marksmen in those days too. "... made a great shot at a snipe over 200 yards away and killed it,"—at least to hear him tell it. Not much change today on that score.

As far as wildlife is concerned, the "good old days" really were just that. When our nation was founded

despite the heavy demand

Florida still provides good public hunting

Wildlife in the Third Hundred

By FRED W. STANBERRY

**Director, Wildlife Management Division
Florida Game & Fresh Water Fish Commission**

in 1776, every section of Florida was inhabited by bear, panther, and abundant wildlife. If there had been any turkey hunters around then, some of them would have known that the best turkey roost in present-day Alachua County was on what would be later called Hog Town Creek, now the area between 8th and 16th Avenues in western residential Gainesville. There were about 20,000 wild turkeys within 15 miles of Gainesville at that time. Deer could have been hunted in those days on the hillside where the

Game and Fresh Water Fish Commission office now stands in Tallahassee.

As Florida's natural habitat was turned into farmland, towns, and cities, populations of wildlife began a gradual decline. The need to establish special areas for the preservation of wildlife species was recognized in 1941 and led to the establishment of the wildlife management area system. This first effort resulted in the purchase of 60,000 acres of land by the Florida Game and Fresh Water Fish Commission in Charlotte County. The tract, named the Cecil M. Webb, became the first wildlife management area. In 1947, the Commission purchased approximately 50,000 acres of land in Palm Beach County at \$5 per acre and the second area, J. W. Corbett, was brought into the system.

With the goal of providing wildlife habitat, but with a meager operating budget, the Commission could not hope to acquire, through purchase, enough

land for a statewide public hunting and wildlife habitat management program. As a result, an intensive program of leasing both privately-owned land and land administered by other state and federal agencies was begun. In 1948, the Robinson Land and Lumber Company of Alabama leased to the Commission approximately 110,000 acres of land in Levy County. In exchange for a 25-year lease, the Commission agreed to fence the area and provide enforcement officers to patrol it. This agreement with the Robinson Land and Lumber Company established the Gulf Hammock Wildlife Management Area and constituted the first of many similar agreements between the Commission and private or public landowners for managed public hunting.

Thanks to cooperation from private landowners and public agencies, the Commission developed one of the most outstanding public hunting area programs in the United States. Today, hunters, fishermen, and other sportsmen may pursue their activities on 43 wildlife management areas, comprising over 4.7 million acres of land. This is a commendable 11% of the total land area of the State of Florida.

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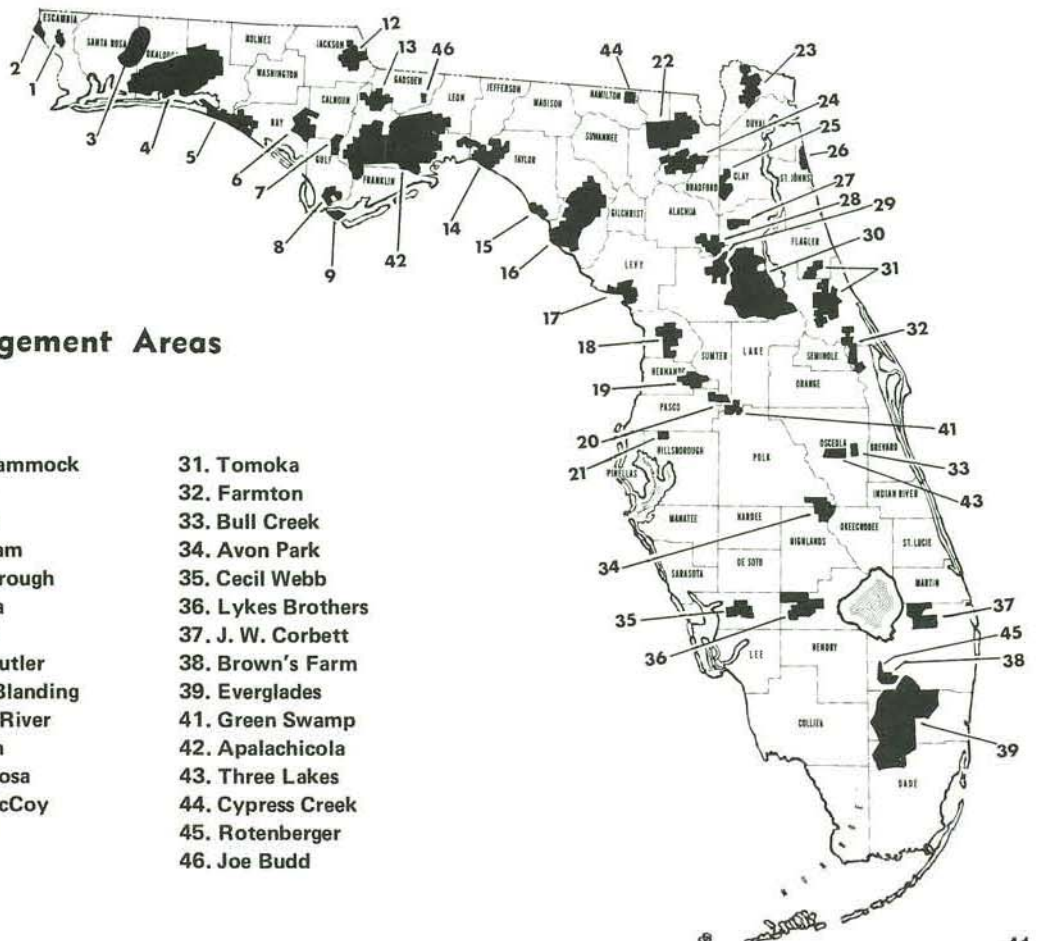


Photo By Gene Smith

Turkey gobbler struts against background of cypress swamp, far left. The turkey has been a prized game species since earliest days of settlement. The management area sign, similar to one at left, is familiar sight throughout the state, marking some 4.7 million acres of hunting grounds for public use.

Wildlife Management Areas

- | | | |
|------------------------|-------------------|--------------------|
| 1. St. Regis | 17. Gulf Hammock | 31. Tomoka |
| 2. La Floresta Perdida | 18. Citrus | 32. Farmton |
| 3. Blackwater | 19. Croom | 33. Bull Creek |
| 4. Eglin | 20. Richloam | 34. Avon Park |
| 5. Point Washington | 21. Hillsborough | 35. Cecil Webb |
| 6. Gaskin | 22. Osceola | 36. Lykes Brothers |
| 7. G. U. Parker | 23. Nassau | 37. J. W. Corbett |
| 8. Edward Ball | 24. Lake Butler | 38. Brown's Farm |
| 9. St. Vincent | 25. Camp Blanding | 39. Everglades |
| 12. Apalachee | 26. Guana River | 41. Green Swamp |
| 13. Robert Brent | 27. Hudson | 42. Apalachicola |
| 14. Aucilla | 28. Lochloosa | 43. Three Lakes |
| 15. Tide Swamp | 29. Fort McCoy | 44. Cypress Creek |
| 16. Steinhatchee | 30. Ocala | 45. Rotenberger |
| | | 46. Joe Budd |



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With the wildlife management area system came a program of developing and maintaining the areas for a sustained yield of game and maximum utilization by the hunting public. Habitat management was begun by the planting of food plots as supplemental wildlife food, the operation of quail and turkey feeders, and marsh improvement. Present day projects are aimed toward long-term goals, and include controlled burning, planting of mast-producing hardwoods, and the introduction of seed-bearing perennial plants. Intensive restocking efforts for deer, turkey, and wild hogs are being carried out on many areas. In addition, campsites, check stations, roads, and boundaries are maintained.

As we look to the future in our bicentennial year, the success of Florida's wildlife management program is uncertain. Wildlife habitat outside of the management area system has been destroyed by development at an alarming rate. Habitat within the management area system has been degraded in many instances by intensive forest management. Increased pressure has been put on the system by an upsurge of leasing of hunting rights by small groups of affluent people offering landowners substantial sums of money for those rights. This has resulted in the exclusion of the public from many superb wildlife habitat areas.

The wildlife management areas have had to accommodate an increasing number of Florida hunters as other available hunting space has decreased. In 1951, 10 per cent (9,710) of the licensed hunters in Florida (96,887) used wildlife management areas. In 1961, 20 per cent (33,619) of the licensed hunters in Florida (170,061) used the management areas. By 1971, this figure had increased to 40 per cent (101,

475) of the licensed hunters (265,005). From 1951 to 1971, the number of hunters utilizing Florida's wildlife management area system increased over 1,000 per cent, while the number of acres in the system increased only 36 per cent. In 1951, there was an abundance of available land for each hunter, but by the early 1970's this "horn of plenty" had turned into "elbow room only" on many management areas, particularly during peak hunting periods.

As a result, the Commission took initial steps during the 1975-76 hunting season to limit the number of hunters using Florida's wildlife management areas. A new quota hunt permit system was designed to restrict hunter numbers to acceptable levels during the first nine days of the hunting season—the peak period of hunting pressure. Each wildlife management area in the state was assigned a quota of hunters, based on acreage and habitat type. Hun-



Photo By Laurence Rossignol



Where habitat conditions are suitable but the population of game is down, restocking may be conducted. Planting of food plots to supplement short supply of natural food plants is one of techniques used to boost local wildlife population. The bald eagle, right, was one of first species officially recognized as endangered.

Photo By Steve Stafford

ters were required to make a written application to hunt their preferred area.

In addition, a new management area concept, designated Type II, was introduced in 1974 in an attempt to further expand the land available for public hunting. Under the Type II concept, the owner may, at his discretion, collect a fee from the hunter for using the area. The owner is responsible for all development and maintenance on his land, but the Commission enforces regulations in effect on the area. This system was designed to encourage private landowners to leave their land open to the public for hunting. There are currently 319,900 acres in the Type II system, and the Commission hopes to provide additional hunting opportunities for the sportsman by expansion of this program.

Recent trends in the state's population growth, habitat destruction, and the land-use policies of many landowners have had their effect on the wildlife management area program. Because of the increasing demand on public hunting areas, sportsmen utilizing the system in the future may have to adjust to shorter hunting seasons with lower quotas, as well as a reduction in bag limits. The pleasure of the hunting experience will be stressed more than just the meat-in-the-freezer aspect. In addition, recreational uses other than hunting—for example, fishing, camping, hiking, and nature study—will be emphasized in order to offer a maximum recreational potential for an ever-increasing Florida population.

Florida's wildlife management areas offer a potentially fine habitat for all wildlife, as well as for those animals considered to be game species. In 1776, when wildlife had the run of the state, the human population was primarily Indian; only a few Europeans were present. By July 4, 1976, the population of Florida will have grown to about 8,800,000. The population as of July 4, 2076 is expected to be nearly double that of 1976. This increasing population has brought about the present threat of extinction for many wild animals. By 2076, there may be more endangered species, unless we can find ways to compatibly live with all our wildlife.

The idea of listing endangered species was instituted in the late 1960's by the U.S. Fish and Wildlife Service, to draw public attention to the plight of some of America's wild animals. The charter members of the list included the national bird, the bald eagle. Some others, almost as well known, were the whooping crane, Florida panther, and key deer. The idea worked, and the public attention was directed toward endangered species. Unhappily, species such as the passenger pigeon, Carolina parakeet, and possibly the ivory-billed woodpecker had already passed into extinction. However, other endangered species are presently holding their own or even increasing their populations within the State of Florida. One is the alligator.

Most states have endangered species programs, and the Fish and Wildlife Service is busy implement-



Photo By Wallace Hughes

ing the new Endangered Species Act of 1973. Management plans are to be developed to actually save from early extinction some of the plants and animals considered endangered. Acting in anticipation of our involvement in protecting endangered species, the Florida Game and Fresh Water Fish Commission established an advisory committee on endangered species in March of 1975. Eight professional experts representing all of the disciplines involved in both flora and fauna in the State of Florida are actively involved as members of the advisory committee.

Many other agencies, groups, and individuals have pooled their efforts to preserve wildlife habitat and endangered species within Florida. Recent actions have resulted in the purchase of such areas as a portion of the Big Cypress Swamp, Three Lakes region, Paynes Prairie Preserve, and a segment of the Apalachicola River bottom. These environmentally sensitive lands provide the most important ingredient for the preservation of endangered species: an appropriate habitat.

Each species has its own problems, sometimes in common with other endangered species, but usually unique. Our state has within its boundaries more endangered species than any other state except Hawaii. Pitifully little is known about most of them, and some may disappear before anything can be done. Others, fortunately, are already receiving protective attention.

As managers of Florida's wildlife, we are confident that professional expertise in both research and management will continue to provide direction for the future of wildlife in Florida.

Sound management of wildlife resources depends however, upon the efforts and good will of every citizen. We all recognize wildlife as nature's trust—a source of relaxation, sport, and great beauty. As we Floridians and Americans begin our third century as a nation, the future is ours to choose. ●



Photo By William Greer

BEFORE THE COMING OF THE WHITE MAN, Indians lived along the shores of Florida's great river systems for at least 2,000 years, and today hundreds of their shell mounds are visible along the margins.

One of the earliest accounts of Florida's fabulous freshwater fishery was written by John Bartram, a botanist from Philadelphia, during his trip up the St. Johns River, beginning in December 1765. His impressions of the lakes, streams, and springs noted during his search for the head of the river are worth repeating:

Lake Beresford he described as being "... one mile wide and two or three miles long. . . . The course is near south and north; the east side is lined with a narrow cypress swamp and live oaks alternately, the west side with pines; but above, *the marshes are very rich*, full of water reeds and elders on both sides of the river, which is about thirty yards broad and near three fathom deep." (Emphasis added.)

"... We came now to a large lake (Loughman Lake—Ed.) five or six miles long and near one wide. A long tongue of low marsh comes from the northeast end, where a long hammock of oaks runs a south course. We then rowed out of the lake and between several islands, and came again into the main river, which runs in general an east-and-west course on a sandy bottom, shoaling gradually until the weeds and reeds stopped our battoe in such a manner that it

perhaps it isn't too late to reverse the trend

Florida's Fishing— Then and Now

was impossible to push her any farther, though the water was three foot deep, and a small current against us. This we suppose was the draining of *the extensive marshes* which opened towards the southeast, how far beyond our view we could not determine. The water reeds grew here in the current as thick and *close together as on the marsh*, that is, as close as hemp; yet the current forceth its way through, and also under the great patches of the pistia, the water persicaria, and other water plants. . . ." (Emphasis added.)

Other descriptions included Lake George, Salt Springs, Blue Springs, and many creeks. Over and over John Bartram noted the presence of the *huge, rich river marshes*.

Any fisherman reading William Bartram's experi-

ences of a few years later would enjoy "trout fishing in Lake George" and "Fishing in the fabulous inland lakes of Florida," which describe largemouth bass fishing in the 1700's, when only the white hair of a deer's tail, some feathers, and pieces of a red garter were used as bait, all tied to "three large hooks, back to back." Frequent catches of 15-to-30-pound trout (bass) were claimed. William Bartram was fascinated by the multitudes of other fishes he found, and vividly recorded the presence of mudfish, bream, redbellies, catfish, warmouth, and gar. He also found "incredible numbers" of mayflies, and recognized that they were "delicious food for birds, frogs, and fish."

Little information on Florida's fisheries was available in the next one hundred years.

John Le Conte's observations in 1822 again described the marshes of the upper St. Johns. He considered this marsh, or bog, as one great spring, continuously pouring forth an abundant supply of water into this noble stream.

Le Conte was an Army officer by profession. His interests were not fishery-oriented, but he could not avoid describing the clear waters and different kinds of fish that appeared to be suspended in air due to the clarity of the water:

"The peculiar transparency of this water to which the reflection of the sky above, and the white sand beneath give a bluish tinge, is another remarkable circumstance, which cannot but strike the attention of every beholder.

"One of the most remarkable things in this fountain is the immense quantity of fish that inhabits it. It is incredible how many are to be seen sporting about in every direction; no comparison can give any definite idea of their number, and they all move

about in perfect safety, careless of everything around, none appearing to have the least apprehension even of those that are their natural enemies, the most ravenous passing in perfect calmness, those that in other situations are their daily prey."

Unfortunately, Le Conte's engineering background was also revealed when he included the following in his report:

"Did the river run through a fertile country, its value to the inhabitants would be incalculable, for excepting the shoals at its entrance, and the bars at the mouth and heart of Lake George, it admits of perfectly free navigation for vessels of above a hundred tons burthen, to within thirty yards of its termination. It may hereafter be made use of to form an internal communication between the Gulf of Mexico and the Atlantic Ocean, and thus free the intercourse between all our maritime states and Louisiana, from the danger and expense of a voyage around Cape Sable. Where this canal shall be formed, and from what waters on the western shore of the Peninsula it shall be directed, remain hereafter to be determined, from a minute examination of the intervening country, and a due consideration of the benefits that will result from each different point of junction."

This was the first reference to a cross-Florida barge canal.

During the 1880s, there was much interest in the American shad fishery of the St. Johns. A sketchy record of the beginning of this commercial fishery, from 1873 to 1896, indicated the average harvest per year was 327,181 pounds. The records showed widely varying catches. 872,074 pounds in 1890 to from 71,914 pounds in 1880.

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Photo By Bill Hansen

By JOHN W. WOODS
Director of Fish
Management Division
Florida Game & Fresh Water
Fish Commission

It would be difficult to overestimate the value of Florida's sport fishing as the hub of the vast recreational allure that the state holds for a large number of the country's citizens. A biologist, left, checks a nice string of panfish that were caught on a north Florida lake. A rod and reeler on the St. Johns, right, hauls in a bream.



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Other early records of commercial fishing from eight counties and Lake Okeechobee, from 1929 to 1934, documented the abundance of bass in those days. Almost 366,000 pounds were harvested and sold from Lake Okeechobee during a 5-year period.

In 1952, John F. Dequine of Leesburg wrote the following: "A problem of long discussion among Florida's outdoorsmen, commercial fishermen, and the Florida Game and Fresh Water Commission has been that of managing the State's fresh waters to make better use of the fishery resources and to provide better sport fishing, particularly the fishing for the famed Florida largemouth bass."

For many years, this subject has been discussed, often quite vociferously, in the legislative halls in the State Capital, as well as throughout the entire state. Since establishment of the Commission in 1942 through an amendment to the State constitution which gave a five-man commission the authority to regulate and manage the game and freshwater fish of Florida, the problem has become more acute and controversial.

The areas around which most of this controversy has raged are the northern half of the St. Johns River (including the 73.5-square-mile Lake George) and Lake Okeechobee, a saucerlike, shallow lake of over 700 square miles.

An important factor in the controversies has been the fact that, during the period from 1920 to 1930, both of these areas achieved worldwide prominence as the locations of the largest and most numerous black bass. Also contributing to the fame of Florida bass fishing, of course, were other large freshwater areas, such as those found in Lake, Citrus, and Polk counties.

As a result of this prominence, Florida, as a whole,

finally began to realize that its fishing, as well as its climate, was a major item in promoting its biggest and most valuable industry—hosting out-of-state tourists.

Probably the most intensified development of sport fishing facilities took place immediately following World War II, when a tremendously increased interest in fishing as a recreation took place in Florida and throughout the nation. As a result of this, many new Florida fishing resorts and tackle shops were established, and many more fishermen, both residents and visitors, appeared on the lakes and streams of the state.

The sale of Florida fishing licenses gives an indication of the increased activity, climbing steadily from a total of 30,843 in 1940 to 275,751 in 1950, an increase of almost 900 per cent.

During these past several decades, various efforts were made to maintain and improve the quality of Florida freshwater fishing. Fish hatcheries were established, and hundreds of thousands of fingerling bass, bream, and crappie were poured into the lakes on the theory that simply adding more fish would automatically improve the fishing. Restrictive measures, such as closed seasons, smaller bag limits, and elimination of commercial fishing, borrowed from northern states, were all put into effect at various times.

In the middle 40s, however, it became evident that these measures were not sufficient to cope with the

There is a lot of casting room on Lake Okeechobee, below—700 square miles of fishing water that is not being utilized to its fullest capacity. The state's reputation for high-quality freshwater fishing is reflected in the sale of over a million licenses during the fiscal year of 1974-75.

Photo By State News Bureau, Dept. of Commerce





Photo By Florida State Parks, DNR

increased army of fishermen. Individual fishermen began complaining that they were catching fewer bass than they formerly had. Blame for reduced fishing success was then laid on the commercial fisherman, who was still legally taking all species except black bass from Lake George and Lake Okeechobee.

The sentiment among some groups of sport fishermen crystallized in a number of meetings and hearings, and resulted in a ban, effective October 1, 1946, on the commercial taking and sale of bream and black crappie (or "speckled perch") in Lakes George and Okeechobee; and the elimination of all commercial fishing devices except trotlines for catfish.

The Commission, at the urging of many sportsmen, commercial fishermen, and fishery scientists, then acquired a staff of fishery biologists in 1945 for the express purpose of finding methods of improving fishing, and determining the proper place of commercial fishing in fresh waters. The first task given these biologists and fish management technicians was to find answers to the Lake George and Lake Okeechobee problems.

This was the beginning of the fisheries program of the Game and Fresh Water Fish Commission. Fishery studies started in 1947 and 1948 were presented to the Commission, and Florida's controlled seining program was approved in February 1952. This program was short-lived, since the general

public never really understood the concepts and purposes of the program. Consequently, commercial harvest and sale of pan fish was banned.

In the years that followed, Florida's steady population increase was accompanied by irresponsible draining of the river marshes described by Bartram and others, reducing the very lifeblood of the rivers. Waste from the cities, new industries, and expanded agricultural areas were recognized by many, but in many cases the damage was almost irreparable.

The largemouth bass continues to be sought and caught, but protection and repairs to the environment will be slow and costly.

In an effort to stimulate this necessary protection and restoration, and to document our concern, consider the following as our impression of the future of freshwater fisheries in Florida.

Florida has a nationally famous reputation for its high quality freshwater fishing. More than 198,000 nonresident fishing licenses were sold in addition to the 919,600 resident state licenses during the 1974-75 fiscal year. It is estimated that freshwater fishermen contributed \$316.7 million to the total economy of Florida in 1975 by purchasing items relating to the pursuit of this sport. Freshwater fishing is a resource that has played an important role in making Florida the great state that it is today.

While sport fishing is not considered in the same category as production of food and fiber, it most certainly plays a major role in making for a desirable environment, because with the increasing pressure of modern life, the chance to "get away from it all" simply for recreation is taking on added importance. The future demand for freshwater fishing and related recreation will greatly increase with the expected growth of the state.

Pollution is the most important problem now facing Floridians in the battle for a quality environment and desirable freshwater sport fishery. Pollution is anything that alters our environment, making it less desirable to the well-being of man. When man's environment deteriorates, so does the environment of many of the creatures man considers desirable (freshwater fish).

Numerous examples of pollution and deterioration already stand out in Florida. Fortunately, we had such a tremendous wealth of freshwater lakes and streams that people were able to move to places when their favorite spots became polluted and no longer desirable for fishing or other types of water recreation. But the pace of pollution has increased at such an astounding rate in the past decade that the outlook for the future is quite dim. We are rapidly running out of new bodies of water to turn to when others are polluted.

Through geological aging, greatly accelerated by man's activity, many of Florida's lakes and streams are rapidly becoming highly eutrophic, or over-

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Commission biologists, left, monitor condition of the state's streams and keep a finger on the pulse of fish populations in key bodies of water. Deterioration of water quality from a variety of causes sometimes is brought to public attention by a fish kill, right below. But this is only symptomatic of the serious underlying affliction that threatens us all.

Photo By William Greer

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enriched. Unless there is a change in the values of Florida's freshwater lakes, this trend will increase. The eventual result will be septic conditions in most of the lakes and streams in Florida. The changes pollution brings about in the aquatic environment are irreversible without tremendous expenditures of money and manpower. Technology available at the present time can stop and reverse some aspects of eutrophication; however, most people are not ready to accept the hardships or costs involved in such an undertaking.

Some of the major causes of degradation of aquatic habitat and freshwater fishing in Florida are as follows:

1. *Discharge of domestic, agricultural, and industrial wastes into rivers and lakes without proper treatment.* The gross examples of improperly treated waste being dumped into bodies of water, destroying aquatic habitat, have been presented numerous times. They would include the Fenholloway River, the St. Johns River from Palatka to Jacksonville, the Peace River, and Lake Apopka. Less publicized examples are even more numerous.

2. *Stabilization and reduction of water levels in rivers and lakes which have historically fluctuated widely.* Such fluctuation helps oxidize organic build-up and flush out some of the soluble nutrients present in the lakes. Stabilization enhances waterfront development but transforms the lake into a stagnant watershed nutrient trap, which creates ideal conditions for rapid eutrophication. This not only destroys the aquatic environment for the desirable freshwater fishes, but renders the lake

unsuitable for contact water sports and eventually lowers waterfront property values.

3. *The increased run-off of pesticides and nutrients from the watershed.* The natural marshes and flood plains which formerly acted as biological waste treatment complexes absorbing and utilizing excess watershed nutrients, are rapidly being drained and channelized. Channelization provides an excellent conveyor of nutrients and pesticides to our freshwater lakes, streams, and estuaries.

4. *Unrestricted dredging and filling of lakes and streams for industrial and urban development of waterfront sites.* During 1972-73, over 200 illegal dredge and fill operations were reported to the Trustees of Internal Improvement Trust Fund. Each operation destroyed some vital littoral zone the nursery grounds required for desirable freshwater species.

5. *Elimination of the full utilization of a natural resource by restricting the removal of commercially-harvestable fishes.* In most cases, this would be beneficial, and not detrimental, to all interests concerned.

6. *Uncontrolled killing of water hyacinths and other so-called noxious aquatic weeds.* By allowing the dead plants to sink to the bottom, there is a rapid recirculation of nutrients into the water column, creation of anerobic conditions, and a significant build-up of bottom silt. Each time these plants are sprayed, it increases the opportunity for the nutrients to be utilized in a less desirable form such as algae blooms.

7. *Unauthorized importation and introduction of exotic freshwater fish species.* Many of the intro-

duced species compete with and can replace, desirable native freshwater fishes. Introduction of exotic fishes for biological weed control without consideration of ecological damage to the native freshwater aquatic habitat would be a great gamble.

The problems of the lakes and streams of Florida have been briefly described with expected effects on aquatic life. The aquatic environment will continue to deteriorate unless there is full implementation of available and future technology.

In a recent report from the Game and Fresh Water Fish Commission in which predictions were made about sport fishing in the St. Johns Valley in the year 2020, we indicated that, if present trends persist, there would be only two places in the 18-county area where largemouth bass can be caught. The implementation of available and future technology can rejuvenate—or at least retard the rapid destruction of—desirable aquatic habitat.

Technology available at present which will sustain or enhance aquatic life is as follows:

1. All lakes in Florida should be allowed to fluctuate on a wide range, to simulate natural conditions, thereby stimulating game fish production. In many cases, the lakes may need to be severely drawn down to set back the eutrophication process.

2. We should implement more efficient nutrient removal for utilization of industrial, domestic, and agricultural effluent; for example, photosynthetic sewage treatment, and spray irrigation sewage treatment.

3. Stringent zoning legislation should be enacted to protect all flood plains.

4. All dredging and filling, except for enhancement of the aquatic environment, should cease.

Photo By Gene Smith



5. Stricter legislation should be enacted to reduce and control the pesticides and herbicides used in the environment.

6. To facilitate nutrient removal and full utilization of the resources, increased freshwater fish harvest techniques should be employed with certain species.

7. Also, to facilitate nutrient removal, there should be a mechanical aquatic weed harvester developed that can transform aquatic weeds into animal food supplements.

8. We should investigate desirable natural and exotic fishes which exhibit superior short-term qualities and can live in an adverse aquatic environment.

9. We should screen commercially-harvestable native and exotic species that can accomplish the dual purposes of removing nutrients and producing food.

10. Applicable short-term management techniques may involve selected rotenone treatments and total renovation of given fish populations in some regions.

11. We should investigate various organisms, native and exotic, that are capable of biologically controlling problem aquatic plants.

Cultural practices which either contribute nutrient materials to the ecosystem or accelerate detrition by induced recirculation of nutrients within the system, result in environmental changes which persist after the practices have been discontinued.

Those intent on grandiose projects to mechanically and chemically remodel our environment have too often found that while they are experts with structural steel, concrete, ditches, dams, chemical formulas, and waterways, they are not trained in the application of ecological principles. The tragedy lies in the fact that much of Florida's aquatic and environmental destruction could have been avoided in the original planning.

By now you are probably asking yourself what all of this has to do with the future of our freshwater fisheries. We say it has everything to do with it. We cannot continue to develop high quality sport fishing in waters that are becoming unfit for the survival of fishes.

It is interesting to note that a society such as ours, where man can remove himself to a certain degree from the influences of nature, continues to ignore the fact that we are changing the environment to such an extent that some of the lower animals cannot survive.

If all this sounds a little dramatic and removed from your actual situation, don't you believe it! Nothing is more important in our existence than reversing exploitation and devastation of our environment. If it continues at the present pace, we won't have time to worry about whether the bass are biting in Lake Jackson, or how big the specks are in Lake Okeechobee. We will be too busy trying to survive. ●

Guns and Game

HUNTING



By EDMUND McLAURIN

there has been a steady harvest of game since wheellock musket days, but Florida still produces a substantial annual wildlife crop

FLORIDA HAS ALWAYS BEEN home for a wide variety of wildlife species, but its present prominence as a hunting state had humble beginnings. In early Florida, there were relatively few hunters around. Aboriginal inhabitants, especially the Calusas and Tequestas among Indian populations, undoubtedly hunted for sport as well as for food, but their numbers were as limited as the potential of their primitive bows and spears.

The coming of the white man with his gunpowder weapons didn't accelerate hunting activity right away, either. St. Augustine, established by the Spanish in 1565, had a reported population of only 2,000 by 1647. There were even fewer guns.

Even as late as 1860, civic records showed only 14,373 men of voting age registered in Florida. In fact, Florida's land area of 54,280 square miles was still virtually wilderness when Florida was voted back into the Union in 1867, after secession in 1861 in support of the Confederacy.

Early white settlers utilized for hunting whatever type of shoulder firearm was to be had. Most brought guns with them, although, as now, localized gun trading undoubtedly characterized some acquisitions. Many of these early hunting guns were military model wheellocks. The mechanism functioned much like the spark wheel of a modern cigarette lighter.

It was development of the flintlock by the French that gave us our first true sporting firearm, but recognition came only after its use as a military weapon.

The American Revolution resulted in the importation of thousands of formidable, French-made Model 1763 Charleville muskets by the Continental Congress, for the arming of troops. It was .69 caliber smoothbore with a 44 $\frac{3}{4}$ -inch barrel having a bayonet stud. This action was fitted to a 57-inch-long black walnut stock having a long, fluted comb that extended nearly to the butt plate. Overall gun length was 59 $\frac{1}{2}$ inches, and weight, with bayonet attached, was 9 $\frac{3}{4}$ pounds.

These Model 1763 Charleville muskets were supplemented by periodic purchases of assorted guns from different European and West Indian countries. Many of these shoulder weapons ultimately saw peacetime use as hunting guns. A fair number found their way to Florida.

As America started making its own military

shoulder weapons at Carlisle, Pennsylvania, and Springfield, Massachusetts, early "U.S. Springfield" flintlocks found ready civilian acceptance. Another period firearm used was the British-made Brown Bess flintlock of .75 caliber.

Civilian use of these and other available military rifles and muskets served to make kills of four-footed game possible, but the older matchlocks and wheellocks failed miserably in the taking of feathered game in flight.

Game today is seemingly well educated to the dangers of hunters and guns. Camouflage helps to even the odds.



To regularly put birds on the table, early settlers needed a gun that would fire a fairly dense pattern of shot at flying game in a short time span after trigger pull. The matchlock and wheellock types in common use were simply too unreliable and slow of powder ignition to be practical. Within limited application, the flintlock made wing shooting possible.

One of the earliest flintlocks especially produced for hunting was the Queen Anne sporting version of a period piece military musket. Both French and English gunmakers turned out custom versions all the while incorporating improvements. Some of these reached Florida.

What about the English blunderbuss? In lineage and application, the single and double-barreled blunderbusses of the period from 1750 to 1800 can be cited as examples of early-type shotguns. European stagecoach guards "rode shotgun" using blunderbuss weapons in much the same manner that sawed-off shotguns were utilized by later-generation American West stagecoach guards traveling wilderness routes.

Most blunderbuss weapons were flintlocks. A few early models were wheellocks.

It was not unusual for a large blunderbuss to be loaded with 16 buckshot and 20 grains of black powder—deadly close-range protection.

As might be expected, some early Florida settlers owning a flintlock blunderbuss, and possessing ingenuity, substituted loads of small shot for the customary man-stoppers, for taking game birds in flight at close range.

A new and growing nation, America needed firearms of practical use. German and Swiss gunsmiths who had settled in Pennsylvania responded by producing guns of new design, notably highly-accurate "Kentucky" rifles. Similarly, invention of the percussion cap and relatively crude, self-contained cartridges gave impetus to firearms development. By the beginning of the War Between the States, there were many fine percussion-type guns around for both fighting and hunting. Some were repeaters.

Popular guns of the period included the Burnside, Maynard, Sharps, Spencer, various Springfields, the Remington "Zouave" rifle, the Colt revolving rifle, plus a wide variety of blackpowder shotguns. Many of these models found their way to Florida and were used for hunting, along with later-arriving Henrys and Winchesters that fired metallic cartridges. Most public libraries have books that picture and describe these interesting guns.

How easily early Florida deer hunters, using flintlock and percussion cap blackpowder rifles, added venison to their larders can only be surmised. There were fewer deer around then, biologists tell us. But there was also less hunter competition for the available game. Quite likely, deer then had only infrequent contact with humans, and, being less



The professional market hunters of yesteryear used these types of weapons to mass-slaughter our wildlife for profit.

"educated" than present-day descendants, often permitted the close-range stalking demanded by the hunting guns used.

Compare the lot of those early deer hunters with today's hunters using muzzleloading rifles by choice but competing in numbers for quarry that knows the danger of man and the significant noise of hunting vehicles.

In the 1975 Primitive Weapons Hunt in the Joe Budd Wildlife Management Area, hunters using blackpowder muzzleloaders had no better success average than 15.9 man-days of effort for each buck bagged!

Between 1840 and 1910, commercialization of the nation's wildlife—Florida's included—was big business. To supply both local grocers and distant gourmet restaurants with game, a horde of market hunters worked steadily, often six days a week, year in and year out. They took everything saleable: wild ducks, geese, passenger pigeons, doves, varieties of shorebirds, and even robins and meadowlarks. It was not unusual for a single wholesaler to buy and sell 200,000 birds in a 6-month period.

(continued on next page)



Could you successfully hunt solely with a muzzleloader like this one? The early settlers of the state did.

(continued from preceding page)

Besides table fare, market hunters supplied the countless colorful bird feathers demanded by milliners for adorning women's hats. Plumes of the snowy egret were in particular demand, and thousands of the species were killed. Florida market hunters were major suppliers.

Of sheer necessity, 32 states had to outlaw the sale of game, and 11 more prohibited export. In 1900, Congress passed the *Lacey Act*, prohibiting interstate shipment.

The snowy egret found salvation through a change in ladies' hat fashions and adoption of the *Migratory Bird Treaty Act* by the United States and Canada, in 1917, and subsequently, Mexico.

In 1903, President Theodore Roosevelt established America's first national wildlife refuge, at Pelican Island, Florida. Conservation was on its way!

President Franklin D. Roosevelt, in 1936, called the first North American Wildlife Conference, to

chart action for restoring once-plentiful wildlife. A direct outcome was formation of the National Wildlife Federation of sportsmen's clubs.

A major step in financing nationwide conservation, as administered by individual states, was made in 1937 with passage in Congress of the Pittman-Robertson Act, levying federal taxes on sales of sporting arms and ammunition. By June 30, 1975, \$594 million had been restored to state game departments for wildlife conservation and restoration programs.

Aware of the need for effective conservation programs, the Florida Legislature, in its 1941 session, passed a constitutional amendment creating the Florida Game & Fresh Water Fish Commission. The amendment was ratified by voters in November 1942. In the ensuing years, Florida's successful game management programs became a model for game departments in other states.

What changes has modern civilization made in game habitat and habits?

The Florida white-tailed deer is not only faring well, but increasing. Undeniably, the increase can be credited to changed land uses, the successful screw worm eradication program of the fifties and early sixties, biologists' studies of deer family disease and control, and good wildlife management practices.

We still have plenty of game to hunt, and our guns are the best ever made. With harvesting of surplus of the first and sensible use of the second, we can keep and enjoy both. ●

In order to give FLORIDA WILDLIFE the base needed to increase its scope and improve its quality, including the regular use of inside color at some future time, the Commission has been forced to raise subscription rates for the first time since 1972. Effective July 1, 1976, a 1-year subscription will cost \$5.00 and a 3-year subscription, \$14.00. Present subscribers may renew or extend their own subscriptions or order gift subscriptions at the current rates (shown below) through June 30, 1976.

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FLORIDA WILDLIFE's "birth certificate" is reproduced above—the title page from our very first issue, a 14-pager. Note that FW was distributed free in those days, to build circulation. The magazine still seeks to convey vital conservation information to the average citizen "... firmly, entertainingly and—constantly."

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June, 1947

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WILLIAM W. WEEKS
Editor

A NEW IMPLEMENT

With our wildlife resources growing slimmer by the month, an alarmed nation is resorting to a new implement to sow the seeds of conservation. The implement is education. In some states it has blossomed into a vast complex machine costing more than \$100,000 annually; in other states it is simpler and less expensive. In some states it isn't even a new implement, but in most it is fresh off the assembly line and still stiff with newness. But regardless of the age or size of this machine, like the automobile, it's here to stay. More and more conservationists have come to realize that education is the only solution to the relentless shrinkage of our natural resources.

Although Mr. Average Citizen is the chief beneficiary of conservation he, strangely enough, must be reminded of it. And one simple reminder won't do the job. His responsibility to nature's endowments must be placed before him firmly, entertainingly and—constantly. Since little Grammar School Johnny of today is Mr. Average Citizen of tomorrow, the same dish must be placed before him. In other words every man, woman and child in the nation must be made to realize that the burden of salvaging our wildlife rests square on their shoulders. A long-range, comprehensive program is the only vehicle which can successfully carry this load.

Here in Florida we are at last assembling the framework for such a machine. FLORIDA WILDLIFE is one of the first essential parts. The ideal educational setup is an efficient composite of information, oral and visual teaching, and plain old Florida-bred publicity. FLORIDA WILDLIFE will carry the bulk of the information load. Anyone who knows the facts of our wildlife situation quickly realizes the need for conservation. But all too many people aren't acquainted with those facts. Distributing them by word of mouth would be a destructively slow process. So the only immediate alternative is to present them through the medium of a regular publication. If the publication can disseminate game and fish facts entertainingly enough to be enjoyable and yet impressively enough to be effective, it will be a success. We hope FLORIDA WILDLIFE will be able to do just that. If it can, one vital cog in our conservation education program will be rolling.



Pileated Woodpeckers, by Ron Jenkins, courtesy of National Wildlife Art Exchange, P. O. Drawer 3385, Vero Beach, FL 32960. Art prints available.